# Improved Program Delivery

## Environment

A Study Team Report

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# PROGRAMS OF THE MINISTER
# OF THE ENVIRONMENT

A Study Team Report
to the Task Force
on Program Review

July 10, 1985

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# FOREWORD

The Task Force on Program Review was created in September 1984 with two major objectives - better service to the public and improved management of government programs. Recognizing the desirability of involving the private sector in the work of program review, assistance from national labour, business and professional organizations was sought. The response was immediate and generous. Each of these national organizations selected one of their members to serve in an advisory capacity. These public spirited citizens served without remuneration. Thus was formed the Private Sector Advisory Committee which has been responsible for reviewing and examining all of the work of program review.

The specific program reviews have been carried out by mixed study teams composed of a balance of private sector and public sector specialists, including representatives from provincial and municipal governments. Each study team was responsible for the review of a "family" of programs and it is the reports of these study teams that are published in this series. These study team reports represent consensus, including that of the Private Sector Advisory Committee, but not necessarily unanimity among study team members, or members of the Private Sector Advisory Committee, in all respects.

The review is unique in Canadian history. Never before has there been such broad representation from outside government in such a wide-ranging examination of government programs. The release of the work of the mixed study teams is a public acknowledgement of their extraordinarily valuable contribution to this difficult task.

Study teams reviewed existing evaluations and other available analyses and consulted with many hundreds of people and organizations. The teams split into smaller groups and consulted with interested persons in the private sector. There were also discussions with program recipients, provincial and municipal governments at all levels, from officials to cabinet ministers. Twenty provincial officials including three deputy ministers were members of various study teams.

The observations and options presented in these reports were made by the study teams. Some are subjective. That was necessary and appropriate considering that the review phase of the process was designed to be completed in a little more than a year. Each study team was given three months to carry out its work and to report. The urgent need for better and more responsive government required a fresh analysis of broad scope within a reasonable time frame.

There were several distinct stages in the review process. Terms of reference were drawn up for each study team. Study team leaders and members were appointed with assistance from the Private Sector Advisory Committee and the two Task Force Advisors: Mr. Darcy McKeough and Dr. Peter Meyboom. Mr. McKeough, a business leader and former Ontario cabinet minister, provided private sector liaison while Dr. Meyboom, a senior Treasury Board official, was responsible for liaison with the public sector. The private sector members of the study teams served without remuneration save for a nominal per diem where labour representatives were involved.

After completing their work, the study teams discussed their reports with the Private Sector Advisory Committee. Subsequently, their findings were submitted to the Task Force led by the Deputy Prime Minister, the Honourable Erik Nielsen. The other members are the Honourable Michael Wilson, Minister of Finance, the Honourable John Crosbie, Minister of Justice, and the President of the Treasury Board, the Honourable Robert de Cotret.

The study team reports represent the first orderly step toward cabinet discussion. These reports outline options as seen by the respective study teams and present them in the form of recommendations to the Task Force for consideration. The reports of the study teams do not represent government policy nor are they decisions of the government. The reports provide the basis for discussion of the wide array of programs which exist throughout government. They provide government with a valuable tool in the decision-making process.

Taken together, these volumes illustrate the magnitude and character of the current array of government programs and present options either to change the nature of these programs or to improve their management. Some decisions were announced with the May budget speech, and some subsequently. As the Minister of Finance noted in the May budget speech, the time horizon for implementation of some measures is the end of the decade. Cabinet will judge the pace and extent of such change.

These study team reports are being released in the hope that they will help Canadians understand better the complexity of the issues involved and some of the optional solutions. They are also released with sincere acknowledgement to all of those who have given so generously of their time and talent to make this review possible.

# TERMS OF REFERENCE

## BACKGROUND

The Ministerial Task Force on Program Review, as part of its overall study, has requested that a review be undertaken of the programs of the Minister of the Environment. This exercise does not duplicate or replace any of the recently completed or current reviews, including the Inquiry on Federal Water Policy, the Parks Canada A-base review, the LeBlond study and the Auditor General's review of departmental programs and operations. These latter exercises are concerned with specific policy or operational issues. The current review is undertaken with a view to producing a program profile which is effective and relevant in its response to both present and future needs, as well as being simpler, more understandable and more accessible to its clientèle, and where decision-making is decentralized as far as possible to those in direct contact with client groups. It is the intention, moreover, to make use of the information already collected through previous studies.

## TERMS OF REFERENCE

There are 34 programs of the Minister of the Environment provisionally listed in Annex A directed to issues related to environmental and heritage conservation and protection. These programs in total involve 10,230 person-years and $766.5 million in annual operating, capital, grants and contributions costs. This represents 95.4 per cent of the department's budget and 92.6 per cent of person-years authorized. Some of the programs and services also generate considerable revenues.

The study team will examine the appended provisional lists closely, to determine whether modifications are required to meet the objectives of the Ministerial Task Force. Based on an appropriately modified list of programs, the study team will provide the Task Force with its advice and conclusions regarding a profile of government programs, which is simpler, more understandable and more accessible to their clientele, and where decision-making is decentralized as far as possible to those in direct contact with client groups.

The study team will provide a report with its observations on and advice concerning:

- means, where feasible, to improve responsiveness to clients, users and the public affected by government action through increased decentralized or consolidated delivery;
- programs to identify structures which may be simpler, more understandable and improve public accessibility;
- relationship of the Minister of Environment's programs to programs of other federal departments, provincial and territorial governments, universities and business in order to remove any duplication or irritants;
- programs where objectives are sound but the form of delivery should be changed, with particular emphasis on privatization;
- existing delivery mechanisms to determine if increased efficiency is feasible;
- current programs and legislation to determine possible gaps inhibiting the effective and/or efficient realization of the federal mandate.

Included in the advice offered by the Study Team could be observations regarding:

- programs that might be eliminated, reduced in scope, consolidated, restructured and added in order to avoid duplication, increase efficiency, remove burdens and fill gaps and improve service to the public (programs include policies, legislation, regulation, services, and tax expenditures);
- possible improvements to federal-provincial communication and program coordination;
- a summary overview of the legislation that would be required to implement any of these program changes;
- the resource implications of any recommended program changes, including increased costs or savings and the number and location of either increases or decreases in staff.
- approaches in other countries which may be relevant to the study.

To reach its conclusions about the best means of achieving the government's goals, the study team is asked to obtain answers to four sets of questions or concerns regarding beneficiaries/impact; efficiency; gaps; and fiscal projections.

## Beneficiaries/Impact

- Who are the clients for each program and are they using the services? Are the programs appropriately targetted? What are the indicators for reflecting the benefits received? Who pays for these benefits? What are the revenues raised?
- What is the existing geographical distribution of the beneficiaries of major environmental services and initiatives, e.g. park establishment and investment, recipients of weather and climate services? Are programs regionally sensitive?
- Which programs impose a regulatory impact and how does this affect economic performance? This includes the effects created by the process of compliance - e.g. red tape, paperwork and delays - as well as specific compliance objectives.
- What is the purpose of the various programs of research, including the overall allocation of research effort across sectors and groups of beneficiaries?
- Which programs impact directly or indirectly on the Canadian economy; what is the distribution between short and long term costs and benefits; which economic sectors are affected, e.g. acid rain abatement and forestry, fishing and construction?
- How are the programs coordinated with provincial, territorial, municipal, university and private sector programming and how can benefits derived by these sectors be improved within the policy of fiscal restraints? (Illustrative examples should be used.)

## Efficiency/Effectiveness

- What is the appropriateness and adequacy of each current program, i.e. what is it supposed to do, is it doing it and is it doing it in the best way to solve the problem?
- Which programs have goals or activities which could be achieved more efficiently through private sector organizations or other delivery mechanisms such as crown corporations or independent agencies?
- Do any programs duplicate work already done by other federal government departments, provincial governments and the private sector? Are there any

programs that could be carried out more efficiently by consolidation with other federal programs, provincial programs, or should be carried out under provincial mandate?

- Which federal programs or group of programs could achieve greater productivity through rationalization of mandates, legislation and resources?
- Are there existing or potential economic markets for greater cost recovery and what are the implications?
- Are regulatory programs consistent, i.e., are the rules commensurate with the risk and magnitude of the harm (problem) and are they applied on an equitable and consistent basis?
- Are any programs at cross purposes with other existing programs and, if so, how can this situation be resolved?
- Do some programs provide obstacles to economic development and growth or impediments to entrepreneurship?
- Are any programs obsolete?

**Gaps**

- What environmental areas or issues, while part of the federal mandate, require further programming to meet government objectives?
- Does the government have sufficient and effective mechanisms to respond to international threats or issues with an international dimension?
- Does the government have sufficient and effective mechanisms to identify and respond to future threats and issues?

**Fiscal Projections**

- Given the current programs, what are the expected future demands for funding? (Scenarios along with a range of future demands for funding could be used).

## LINKAGE WITH CONSULTATION PAPERS AND OTHER ONGOING STUDIES

At the moment an Inquiry on Federal Water Policy and a review of the department's public consultation process are being undertaken. If consultation papers are prepared, they will serve to stimulate discussion and consultation between the private sector and responsible Ministers on possible future policy options. Although the study team will undoubtedly want to examine and take note of these reviews and any other consultation papers or studies, the team's central task will be to advise the Ministerial Task Force along the lines set out above. Except insofar as it might detract from the overall coherence of its review, the study team need not pursue programs which other team leaders have undertaken to examine within the scope of their terms of reference. However, these instances should be noted in the study team's report. Contact will be made with the study teams on Real Property Management, Agricultural Programs, and Regulatory Programs to decide on necessary linkages.

## COMPOSITION OF THE STUDY TEAM

The study team shall be chaired by a senior private sector executive who will be appointed in consultation with DOE. The vice-chairman will be a senior official from DOE. The chairpersons will report to both the Public Sector Advisor and the Private Sector Liaison Advisor serving the Chairman of the Task Force. The chairpersons will be supported by five private sector representatives. A small secretariat will be provided to support the team; all to be located in the department, with costs to be borne by DOE. The team, or its chairpersons, shall meet with the Public Sector and Private Sector Liaison Advisors and the Private Sector Advisory Committee at their request.

## WORK PROGRAM

In view of the multiplicity of programs that fall within the general category of environmental and heritage protection and conservation, it will be desirable to assign specific tasks to sub-teams dealing with specific subjects. To this end, the study team will submit for consideration by the Ministerial Task Force a detailed work plan showing what sub-teams will be organized for that purpose.

The study team shall have access to any evaluations or evaluative tools that departments have with respect to programs covered by this review, as well as material recently prepared by DOE for the Minister of Environment's own program review.

## REPORTING SCHEDULE

The study team is requested to develop a work plan by April 15, 1985 and to report its initial findings to the Ministerial Task Force by the end of May, 1985. A final report will be submitted by July 10, 1985. In addition, the Task force will receive brief progress reports on the work of this and other study teams at all regular meetings.

## COMMUNICATION WITH DEPARTMENTS

As noted above, the study team is expected to identify, from the point of view of service to the public, any possibilities it finds for improvement for example, by consolidating programs within the federal government, and to advise on further actions it thinks are needed to develop these possibilities. The Task Force will expect the study team to have consulted with any department with an interest in any area identified. Ministers of those departments which depend on services from the Department of Environment or are otherwise linked in some way to the activities of the Department of Environment will be advised of the Terms of Reference of this study.

## ANNEX A

## LIST OF PROGRAMS OF THE MINISTER OF THE ENVIRONMENT

| | |
|---|---|
| EC1 | Weather Services |
| EC6 | Ice Services |
| EC7 | Air Quality & Atmospheric Research |
| EC16 | Wildlife Interpretation |
| EC17 | Long Range Transportation of Airborne Pollutants |
| EC18 | Commercial Chemicals |
| EC20 | Technical Services |
| EC22 | Toxic Chemicals |
| EC23 | Waste Management |
| EC25 | Federal Environmental Assessment Review Office |
| EC26 | Historic Sites and Monuments Board of Canada |
| EC30 | Water Management Research |
| EC35 | Co-operative Associations |
| EC36 | Heritage Canals |
| EC37 | Historic Parks and Sites |
| EC38 | National Parks |
| EC90 | Agreements with Provinces & Municipalities for Establishment of National Parks |
| EC91 | Agreements with Provinces & Municipalities for Fire Protection |
| EC92 | Agreements with Provinces, Municipalities or Private Non-profit Organizations for Historic Sites |
| EC93 | Agreements with Provinces for Cooperative Heritage Areas |
| EC94 | Canadian Heritage Rivers |
| EC95 | Agreements for Canal Bridges |
| EC96 | Climate Services |
| EC97 | Migratory Birds Conservation |
| EC98 | Wildlife Research Conservation |
| EC99 | Flood Damage Reduction |
| EC100 | Water Management Data |
| EC101 | Canada/US and Interjurisdictional Water Management |
| EC102 | Land Monitoring, Evaluation, Data Systems |
| EC103 | Land Use Policy and Research |
| EC104 | Industrial Programs |
| EC902 | Environment 2000 |
| NBC1 | National Battlefields Commission |

# STUDY TEAM MEMBERS

**Team Leader**

George H.C. Layt
Senior Vice-President
Stelco
Toronto, Ontario

**Deputy Team Leader**

Clinton Edmonds
Regional Director General
Environment Canada
Halifax, Nova Scotia

**Private Sector Members**

David Brooks
Principal
Marbek Resource Consultants
Ottawa, Ontario

Doug Cook
Manager
Imperial Oil Limited
Toronto, Ontario

Alistair Crerar
Chief Executive Officer
Alberta Environmental Council
Edmonton, Alberta

Bernice Goldsmith
Professor, Faculty of Engineering
Concordia University
Montreal, Quebec

Jim MacDonald
Canadian Labour Congress (ret'd)
Ottawa, Ontario

**Public Sector Members**

Ward Falkner
Associate Director General
Department of Fisheries and Oceans
Vancouver, British Columbia

Jim Maxwell
Director General
Environmental Conservation Service
Environment Canada
Hull, Quebec

James McCulloch
Director General
Atmospheric Environment Service
Environment Canada
Downsview, Ontario

Kim Shikaze
Regional Director
Environmental Protection Service
Environment Canada
Toronto, Ontario

George Yeates
Director General
Program Management Directorate
Parks Canada
Hull, Quebec

**Administrative/Evaluation Support**

Peter O'Hara
Director, Federal-Provincial
 Relations
Corporate Planning Group
Environment Canada
Hull, Quebec

# SUMMARY

This report contains a number of clear messages, which may be summarized as follows:

a. while considerable progress has been made on environmental and heritage matters, Canadians are increasingly aware of the importance of the issues, and are demanding that government come to grips with them;

b. Canadians value highly the services which they receive from the Department of the Environment to help them adapt to their physical environment;

c. there are no easy solutions to the problems of environmental deterioration and heritage destruction due to a number of factors, some of which are:

   the high costs of short-term remedial action are easily quantified, but the long-term costs of inaction cannot be measured precisely;

   several jurisdictions have to work in concert to make significant progress;

   the rational discussion of issues is frequently impossible because reactions on all sides have emotional aspects;

   the general public is as yet unwilling to adopt the concepts of trade-offs and acceptable-level-of-risk, and doubt the commitment of government and industry to remedial measures, particularly where large expenditures are required.

Our recommendations, in keeping with the Terms of Reference we were given, are directed toward better ways of doing things. Specifically, the study team is recommending to the Task Force that the government consider proposals which would lead to:

a. a stronger commitment of the federal government to environmental issues and a more effective role at the federal level for the Department of the Environment in addressing these issues;

b. a streamlined and more accountable management within the department, in part through the elimination of much "micromanagement" or "counter-management" generated both within the department and by the central agencies. This includes an improvement in the management of science in the department;

c. a department more responsive to its clients and stakeholders through greater involvement of external players (such as other government departments, other levels of government, and persons and organizations from the non-government sector) in the establishment of priorities and in the planning, implementation and evaluation of programs. This approach should also help the department become more outward-looking and more future-oriented;

d. a more cost-effective operation and a greater contribution to private-sector development through greater involvement of other levels of government and the non-government sectors, by undertaking co-operative (and cost-shared) activities, by contracting, and through increased cost recovery; and

e. a more informed discussion of national environmental issues through a more balanced presentation of them to Canadians and others, as well as an improved sense of trust in the government's commitment to the environment.

None of the above requires the transfer of organizations to or from the department. The Department of the Environment is a conglomerate, but the current grouping of missions and functions is not illogical.

Many of the economic benefits accruing from our options are in the form of expenditures avoided in the future because of new approaches. There will be dollar and person-year savings from the reductions in management and administrative support services but with minimum changes in program delivery.

The team consisted of twelve persons, six of them from the non-government sector. Our proposals were developed by consensus.

Detailed profiles and assessments of thirty-three programs attributed to the department were developed following personal and telephone interviews with over four hundred persons representing other government departments, all ten provinces and the two territories, municipalities, many segments of the private sector and many organizations and individuals from the rest of the non-government sector. (In some cases, knowledgeable persons from the United States were consulted.)

To supplement the program assessments, overview papers for clusters of programs with common elements were written.

Additional studies on specific topics or themes that cut across programs were undertaken. These papers deal with internal management issues, relations with those outside the department, the management of renewable resources, the role of the department in the North, and better ways of fulfilling certain elements of the mandate.

# OVERVIEW

## BACKGROUND AND PERSPECTIVES

A healthy environment and the wise use of natural resources are essential to the maintenance of life on earth, to the sustenance of a vibrant economy, and to the creation of a high quality of life -- in both the short and the long-term.

Environmental knowledge and information are essential to carry out the daily business of Canada safely, economically and for the general benefit of Canadians.

As stated in the World Conservation Strategy, which Canada has endorsed:

> Conservation is defined here as: the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. Thus conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment. . . .
>
> Conservation is a process -- to be applied cross-sectorally -- not an activity sector in its own right. In the case of sectors (such as agriculture, fisheries, forestry and wildlife) directly responsible for the management of living resources, conservation is that aspect of management which ensures that utilization is sustainable and which safeguards the ecological processes and genetic diversity essential for the maintenance of the resources concerned. In the case of other sectors (such as health, energy, industry), conservation is that aspect of management which ensures that the fullest sustainable advantage is derived from the living resource base and that activities are so located and conducted that the resource base is maintained.

As the foregoing definition makes clear, conservation and development are not alternative but complementary forces.

The Department of the Environment (DOE) is the federal department most concerned, in an overall sense, with conservation as defined by the World Conservation Strategy. The department was formed in 1971 by bringing together agencies with the federal mandates for renewable resources and related areas. Since that time, two large agencies (the Fisheries and Oceans Service and the Canadian Forestry Service) have been transferred out of the department and one (Parks Canada) has been transferred in. Except for the creation of the Environmental Protection Service to consolidate those units dealing with various aspects of pollution, the other units making up the department have generally remained intact from an organizational perspective. They were aligned in large mission-oriented components called "Services", each headed by an Assistant Deputy Minister. The major Services are: the Atmospheric Environment Service; the Environmental Protection Service; the Environmental Conservation Service; and Parks Canada. Disruptions in the programs of the sub-units comprising the Services were minimal so that the new department took a form similar to a conglomerate as opposed to a fully integrated organization.

Perhaps the most striking features of the department are its very large size and the breadth and complexity of its mandate. The 1985/86 budget stands at 10,294 person-years and $760 million. These resources are applied in providing a wide array of activities for which the Minister is responsible: from the management of national parks and migratory bird sanctuaries to the provision of weather, ice, sea-state, air quality and climate information; environmental protection services; land, water, and wildlife resource programs; and research and coordination services for assessing environmental impacts and addressing complex environmental issues, such as acid rain.

There is an increasing public awareness of, and stronger public demand related to, the environment. For example:

- all public opinion polls indicate wide and strong public support for an active federal role in the protection of environmental quality and of heritage preservation;
- the department has received more than 15,000 letters since last November from citizens concerned about what they perceive as inadequate attention to environmental matters; and

- a significant part of the 1985 provincial election in Ontario was fought on environmental issues.

The increased significance of many environmental quality issues can be traced to five broad origins:

- growing use of chemicals in society;
- poor resource harvesting practices;
- combustion and certain other sources of energy;
- inadequate attention to waste management; and
- greater knowledge and understanding of impacts.

The issues share some characteristics:

- subtle and insidious in development;
- difficult to discover cause-and-effect relationships;
- impacts can be devastating and costly;
- some are ubiquitous and pervasive;
- many have inter-jurisdictional effects and implications; and
- easier and less costly to solve by preventative measures.

Direct services to the public range from the protection and presentation of the nation's natural and cultural heritage to the development and communication of weather information. Demand for these services is high. (Over 30 per cent of Canadians use national parks, and the demand for preserved areas is growing; almost 100 per cent use weather forecasts, some to guide daily activities and some as a matter of safety.) These issues are both less and more contentious than those relating to environmental quality -- less because they seldom lead to crises but more because they frequently impact directly on the daily activities of Canadians.

A federal role in environmental conservation and in the provision of environmental information is therefore widely acknowledged and broadly supported. However, that role cannot be exclusive; it is shared with the provinces and territories, with industry, with other resource users, and with the public at large. Management and resolution of environmental issues -- whether they involve a threat to health, the establishment of a new park or the extension of weather services -- is complex and requires concerted efforts by many sectors of society and different levels of government. Canadians have demonstrated that they expect their federal government to be objective, professional, forceful and fair in pursuing its mandate to deal with environmental matters.

Besides the challenges faced by all government agencies in defining an appropriate role and in determining the best way of fulfilling that role, and the fact that the department has the characteristics of a conglomerate, DOE faces four problems that, if not wholly unique, are at least much less important for other federal departments: a) it has a very large informal mandate, b) it is inherently impossible to define an optimum level of service, c) it needs to serve as advocate as well as broker, and d) it plays the role of both a line department and a ministry of state.

a. DOE's formal mandate is described in the DOE Act and in the department's policy statements. However, it is given an even larger informal mandate by the Canadian public, for whom the department represents the concept of "environment" with all that word has come to connote. The public is not much concerned with jurisdictional lines between federal and provincial authorities, much less among federal departments; if there is an environmental threat, they expect DOE to be prepared to do something about it, or even to have done something earlier that would have prevented the problem.

b. Adding to the practical difficulties of an informal mandate is a theoretical one: there is no principle or analysis which DOE can use to learn how much environmental protection or how much heritage preservation is enough. This does not mean that the answers are devoid of analytical content -- it is, for example, critical to determine what it will cost to achieve different levels of risk or of species preservation -- but it does mean that the ultimate choices about actions and investments must be determined politically.

c. Partly as a result of the preceding two problems, DOE must serve as an environmental advocate as well as a broker of information about the environment. The problem is that, in terms of its formal mandate, credibility lies with the brokering function whereas, when it comes to its informal mandate, credibility lies on the side of advocacy. Moreover, the functions of broker and of advocate will overlap and it is naive to think that they can be kept as separate as models of economic and political behaviour suggest. Therefore, the department will always have to be both advocate and broker, though by no means equally in all sectors and for all issues. Its goal should not be to eliminate one or the other of these functions, but rather to know (and to make clear to the public) when it is exercising one function and when the other.

d. Finally, DOE serves as both a line organization delivering programs and also as a ministry of state trying to influence the policies and programs of other government departments. To a considerable degree the two activities are synonymous with a reactive and an active role. The nature of environmental issues is such that, once a problem has been identified (e.g., acid rain), the department may well have lead responsibility for action but, in order to reduce or avoid a problem (e.g., electricity conservation and recycling of metals), the department will generally have to work in the areas of responsibility of other agencies or even other jurisdictions.

With regard to the broad relationship between environmental management and economic development, the experience of the past decade, as seen by the World Commission on Environment and Development, demonstrates that:

- benefits generated by environmental measures, including the damage costs avoided, have generally exceeded their costs;
- macro-economic effects of environmental policies on investment, productivity and trade have been minor, and often positive;
- more jobs have been created by environmental measures, than have been lost;
- pressure on industry to solve pollution problems has often led to new processes, cleaner technologies, more environmentally efficient products and plants that are more resource and energy efficient.

Because the environmental impacts of development are usually unknown within the normal time frame considered in planning and management, are not always measurable and extend beyond the jurisdiction where the costs occur, the resolution of environmental/development issues typically requires a multi-disciplinary and multi-jurisdictional approach. Institutional barriers and other constraints to this approach should be removed. As stated in Ms. Brundtland's speech of October 1984 to the World Commission:

> Part of the problem stems from the fact that while industry and the sectoral agencies of governments are sometimes seen as "targets" by environmental agencies they are seldom seen as "participants" in the development of environmental policies. Environmental policy is seen as something separate, related to the protection or conservation of water, land and species: perhaps as an "add-on" to economic policy but seldom as economic and sectoral policy itself.

The foregoing perspectives suggest that DOE should:

- take a more strategic and active approach in the management of environmental issues;
- develop a stronger and better-focused inter-disciplinary scientific capability to investigate issues and provide the technical base for decision-making;
- establish a more effective early warning environmental monitoring system;
- improve its capability to manage issues horizontally across the mandates of individual federal ministers and to mount concerted action with the provinces and other national governments;
- strengthen consultation with all stakeholders;
- ensure Canadians are provided with regular "state of the environment" reports, including the implications of environmental trends; and
- take whatever steps are necessary to clarify and make more explicit its role and mandate.

## RESULTS OF THE SPECIAL THEME STUDIES

It is impossible to capture an area as complex as that covered by the Department of the Environment within programs determined by budget lines. The study team found it essential to conduct some cross-cutting theme studies to examine additional concerns related to our Terms of Reference. This section summarizes the results of these analyses, which form the introduction to each grouping of program assessments in the report.

## Organization, Management and Resources

Our paper on the subject of DOE's Organization, Management and Resources is broad in scope, ranging from the department's composition and image to management styles and the provision of common support services.

As indicated above, DOE is a conglomerate comprised of organizations with diverse missions and different approaches to fulfilling their mandates. The organizational grouping is not illogical, but a distinctive style of corporate management is necessary to ensure effective and efficient departmental performance.

Two of the DOE organizations, the Atmospheric Environment Service and Parks Canada, are large self-contained organizations with the necessary expertise to meet their well-defined mandates. Together, they account for nearly 70 per cent of DOE's budget and over 70 per cent of its person-years. The clarity of mandate and the means to meet it in these two organizations contrast sharply with the general situation pertaining to those DOE organizations with missions for environmental quality protection and resource conservation (Environmental Protection Service, Environmental Conservation Service, five regional director general organizations and the department's Corporate Planning Group.) The issues to be addressed in these missions and the organizational and management arrangements applied are both complex. Many of the adverse comments made by DOE's stakeholders can be traced to difficulties the department has experienced in coming to grips with the complex issues facing these missions and in establishing organizations and management systems that can cope with the complexity.

The department faces major changes with regard to organization and management. To improve the department's capability to face these challenges, the study team recommends to the Task Force that the government consider certain measures designed to stimulate:

a. the introduction of a management system based on the principle of strict accountability;

b. the adoption of a management style appropriate for conglomerate management within the context of the federal government;
c. the establishment of simpler, but more effective, organizational and management structures for handling its missions for environmental quality and resource conservation; and
d. greater participation of subordinates in decision-making processes and more effective consultations with union bargaining units.

Success in these ventures is dependent on the reduction or elimination of micromanagement originating within the department and from central agencies.

Our analysis indicates that DOE did not share in the overall increase of the federal government person-year allocations over the last decade or more. It also indicates that the real value of DOE's budget has declined over the same period. The study team believes that implementation of the proposals contained in our paper on these subjects, and those relating to organization, management and support services presented in our other assessment reports, would reduce DOE's person-year requirement by around six per cent -- largely through simplified structures and processes.

### Management of Science

There are many opportunities for increasing the effectiveness and efficiency of scientific management within DOE. Policies are identified that will help to:

a. identify scientific endeavors of high priority;
b. reduce bureaucratic over-control of scientific personnel; and
c. examine alternative delivery mechanisms for scientific programs, including increased contracting-out, crown corporations, and the use of structures similar to the Interdepartmental Panel on Energy Research and Development.

### Externalization

Within the area of management, one paper deals with "externalization" of activities currently undertaken by government. While there have been some moves by the department in the direction of increased cost recovery, contracting-out and privatization, more can be done by developing among staff an understanding of the principles of, and by removing some or all of the "disincentives" to, externalization. Proposals are made to effect these changes. However, the situation is also confused by the fact that, when people speak of privatization, they are often not clear on what they mean. At one extreme they may mean only contracting-out, where government pays all the cost; at the other they may mean true privatization where government pays none of the cost and market forces govern. Between these extremes are arrangements (usually with cost sharing of some type) with other levels of government and non-governmental organizations. The study team believes that many of the activities now undertaken by federal public servants could be done by others. However, given the possibility of disruption, decisions about externalization should not be taken lightly; some net benefit to the taxpayer should result. The worst mistake would be to make a decision on purely ideological grounds.

### Implementing the Federal Environmental Quality Mandate

The programs of many federal departments affect the environment or are affected by it. The government policy of placing upon them the responsibility to act in an environmentally responsible manner is strongly supported. However, the study team feels that the Department of the Environment in some cases does not have the tools, and in others does not fully use those tools that are available, to ensure consistent and effective application of this policy. The study team suggests that the Minister vigorously apply and test the tools that now exist within DOE to influence other departments and so determine if new measures are needed. Where there is already a good appreciation of deficiency in authorities, it is the view of the study team that the Minister should propose to Cabinet, after consultation with other Ministers, amendments to DOE's legislation, and consolidation within DOE of some authorities and related programs located in other departments (where Ministerial agreements will not suffice).

Implementing the federal environmental quality mandate requires commitment from the most senior level of governments and coordinated input from many government and non-government agencies. In particular, resolution of the improper management of chemicals in Canada, a major threat to public health, the economy and the environment, involves in one way or another 58 Acts of Parliament, 24 federal departments, $143 Million and 2600 person years. Despite the magnitude of the problem and the resources involved, there is no clear accountability, no clear policy direction, and no effective mechanism for ensuring commitment of resources to priorities. As a demonstration of a mechanism to successfully manage horizontally in the federal government, the Minister of the Environment, supported by the Ministers of Fisheries and Oceans, Health and Welfare, and Agriculture, should come forward with a proposal to the Prime Minister to form a Ministerial Task Force on Chemicals Management in Canada with the mandate to resolve this problem.

## Renewable Resource Management for Sustainable Development

There is increasing competition for the use of Canada's prime resource lands, and some of the best farm, forestry, and wildlife lands are being lost either to other uses or to land degradation, including salinization, loss of organic matter, compaction, acidification, wind and water erosion. It is the study teams's view that current production levels of forest products, fish, agriculture and wildlife are all in jeopardy with severe economic disruptions possible. In order to make the most efficient use of our limited resources, we propose that the Minister of the Environment strengthen the role of the Interdepartmental Committee on Land. We also suggest that the Minister of the Environment, in consultation with the Ministers responsible for Agriculture and Forestry, develop an agenda for action on land conservation issues of national significance.

## Public Consultation

DOE is a pioneer in the federal government in its efforts to consult directly with the public. It has developed its own Public Consultation and Information Availability Policy and also supports the Canadian Environmental Advisory Council (CEAC), the Environmental Non-Governmental Organization (ENGO) Network, and a miscellany of formal and informal processes which are specific to program activities. However, the public, the provinces and the department have encountered several problems with the implementation of these policies. To improve the situation, the study team proposes that CEAC adopt a much higher public profile. It would continue to provide advice to the Minister but would also be responsible for promoting better informed public debate on environmental issues while avoiding taking positions on the policy of government. This proposal would increase expenditure by $1 to 2 million annually, against which improved public awareness and a better appreciation of public sentiment should be weighed. CEAC could be asked to consider ways for labour organizations to become directly involved in promoting environmental awareness and improved environmental practices. The study team questioned the value of the annual public consultation meetings, but suggested that most other aspects of the public consultation policy be continued. It also proposed continued support of the ENGO Network. Finally, although the study team agreed that support of specific public interest groups was valuable, particularly for interventions at federal environmental hearings, it could not agree on the purpose for which funding should be provided or whether the source of the funding should be the department or another agency.

**Environment Canada and Relations with the Provinces**

Although wide differences exist in the attitudes of provinces/territories to DOE's programs (varying from a desire for more input from the department to an expressed wish for the federal government to withdraw from certain areas of activity), overall relationships are good. An extensive array of interactions and agreements between the department and the provinces and territories, has done much to overcome the muddy divisions of jurisdiction in environmental matters and to promote effective use of the resources of both levels of government. The study team favours continuation of this approach, as it is likely to be more productive than a concerted legal effort to "clarify" jurisdictions -- although specific cases may benefit from legal clarification. We suggest that the department provide policy and strategic guidance to assist its line managers in the difficult task of balancing achievement of their mandate with government restraint objectives and the creation of provincial/territorial irritants. We also propose revitalization of the Canadian Council of Resource and Environment Ministers (CCREM), a ministerial level federal/provincial body. It has many achievements to its credit but in recent years has not been used to its full potential.

**Environment Canada and the North**

Resource development and environmental protection policies and programs in the North are a source of confusion and frustration. Compounding the complexity is uncertainty produced by:

a. protracted debate and negotiations on aboriginal rights; and
b. the aspirations of the territorial governments for greater self-government.

It is the study team's view that the general solution to these issues is a rapid but orderly devolution of additional responsibilities and authorities to the territorial governments. This would enable the consolidation of many activities, provide clearer accountability and bring decision-making on resource and environmental affairs closer to those most directly affected. The process could well begin with the administrative delegation of many federal acts of a provincial nature that deal with renewable resources and environmental protection in the North.

## Native Peoples

The negative impacts of resource development, wildlife mis-management and environmental degradation have been disproportionately heavy on Canada's native peoples. In the team's opinion, the programs of Environment Canada do not adequately address this situation. The proposals of this study team call for prompt action on the following:

- improved consultation and representation;
- planning to offset future adverse impacts;
- resolution of grievances on noisy low-level flights by NATO aircraft based at Goose Bay;
- increased participation of northern natives in DOE's northern activities and those of other departments;
- development and wide distribution of materials on the pros and cons of seal hunting and leg-hold traps;
- higher priority to the protection of wetlands as waterfowl habitat; and
- support for activities that will provide other Canadians with more understanding and appreciation of native history and culture.

## International Development Assistance

Canada's international development assistance program has suffered from a lack of adequate consideration of environmental impacts. As a result, not only is the aid less effective than would otherwise be the case, but Canada is subject to criticism from international agencies, other donor nations and non-government organizations. The study team recommends to the Task Force that the Minister for External Relations continue to support CIDA's efforts to assess and give greater environmental consideration to Canadian aid projects and that the Minister of the Environment provide assistance as requested.

## RESULTS OF THE PROGRAM REVIEWS

Much of the effort of the study team was focused on the 33 programs in the Minister's portfolio and the means through which more than 150 specific recommendations are made to reduce the net cost or improve the effectiveness of these programs.

Across all programs, our recommendations to the Task Force have the potential for reducing the department's planned expenditure levels over a four year period to 1989/90 by approximately $40 million. They also have the potential to generate in the order of $90 million from increased revenues over the same period.

Other proposals are intended to avoid or reduce future expenditures that would be necessary if present policies are continued.

We also point out a number of areas for study that are likely to produce additional cost savings and/or revenue but that cannot be quantified until investigations are complete.

As well, a large number of our proposals are intended to:

- improve responsiveness to the general public and specific beneficiaries;
- improve relationships with, and remove duplication involving, the provinces and other stakeholders;
- accelerate resolution of important and complex issues;
- improve ability to identify emerging issues and deal with them early, thus avoiding a heavy "environmental debt" in the future;
- place renewable resource management on a sustainable basis;
- externalize numerous program activities; and
- improve the efficiency of program delivery.

We are not suggesting the immediate elimination of any existing programs, although many changes are suggested to improve their effectiveness and ensure that emerging problems are dealt with expeditiously. Several of the programs that require considerable annual resource support are in the category of those that provide "understanding, appreciation and enjoyment for all Canadians". We have not attempted to assess whether Canada can afford such programs in view of continuing economic problems. This question can best be answered by political judgement. However, we can say that, in the judgement of this study team, none of this class of program was considered frivolous or unwarranted.

### Parks Programs

The parks programs include the protection and presentation of both natural areas and historical sites that are deemed to be of national or international significance. The study team confirmed that the primary purpose of these programs is preservation but emphasized that not all areas should be left wholly natural nor all sites restored to exact historical accuracy. By their very creation, parks and sites attract tourism, and we suggest ways to improve their support for the local and regional economies in which they are located. We also focus on ways to share planning and operations in Parks Canada's programs, to identify alternative methods for funding park acquisition, and to give a greater role to native peoples in park planning and management. Finally, we examine ways to improve the efficiency of park operations and eliminate the critical gap in maintenance and recapitalization of park assets that now exists.

### Atmospheric Environment Programs

The atmospheric environment programs make up Canada's national weather service whose function is to provide weather forecasts for safety and security. The study team found that the concept of a single service was appropriate and effective, but that growing recognition of the economic value of good weather and climate information was increasing the demands for additional services. This points to the need for identification of the core level of service which should be provided as a public service. Above this core level, the beneficiaries of the services should pay for all associated costs. The study team also identified a good potential to externalize activities. Accurate weather forecasting requires enormous amounts of data, much of which is being stored; a number of the suggestions focus on the need to review environmental quality data collection, handling and storage activities.

## Programs for Sustaining a Healthful Environment

The programs concerned with sustaining a healthful environment are directed at the prevention, elimination and reduction of the releases of harmful pollutants to the environment. The review of these programs identified both a need and strong support for them. It also identified a need for an organizational entity at the federal level to integrate the delivery of the programs and provide leadership in sustaining a healthful environment for Canada. This review indicated that there has been significant change over the life of these programs in terms of both the issues being addressed or requiring attention and the delivery systems employed.

The study team's recommendations to the Task Force have been developed in several key areas towards the objective of sustaining a healthful environment. They include:

- reaffirming the government's intentions with regard to sustaining a healthy environment and indicating how these intentions are to be administratively achieved;
- developing federal management mechanisms (including a ministerial task force) that will be the vehicles through which overall management direction, focus, integration of effort and commitment of resources can be achieved;
- developing more effective working relationships with the provinces and clarifying federal/provincial roles and responsibilities in the environmental quality area so as to eliminate jurisdictional conflicts and/or duplication of effort (and to jointly communicate these relationships to the public);
- focusing scientific effort from all sources on the priority issues and subjecting scientific findings to internal and external peer review; and
- developing a more open approach to communication with the public and with the stakeholders in terms of data sharing, joint priority setting and solution development through a process of consensus seeking. (Communications should be a process not an event.)

## Water Conservation Programs

Water programs include research, data collection, flood damage reduction, and joint management regimes. The study team observes that, although water is a provincial resource, the federal government has constitutional responsibilities and authorities when international interests, navigation, fisheries, federal lands or undertakings are involved. Based on this role, the study team has examined means to improve data gathering, increase externalization of activities, and improve ways of determining research priorities. Other proposals focus on the need for new policy initiatives regarding international and interprovincial commitments and concerns dealing with water quality, large-scale water exports and diversions, water supply/demand imbalances, and the tightening up of flood mapping agreements.

The study team met several times with members of the Inquiry on Federal Water Policy, which will be presenting its findings shortly. To the best of our knowledge, there is no conflict between their views and ours, though of course their recommendations will be far more extensive and detailed. However, we suggest that the results of both inquiries be considered before any changes are implemented.

## Wildlife Conservation Programs

Wildlife activities within DOE include research on, and management of, migratory birds, research on other species that are threatened or endangered, and wildlife interpretation (i.e., activities that encourage and provide opportunities for the development of awareness, enjoyment, understanding and appreciation of Canada's wildlife heritage). To improve the delivery of these programs, proposals are made to:

- clearly identify objectives;
- formulate policy reflecting the federal mandate for wildlife;
- advance federal/provincial/territorial and international agreements on wildlife;
- develop review mechanisms for the conduct of research;

- seek increased consultation with native peoples;
- increase co-operative activities in wildlife conservation with non-government organizations; and
- protect and enhance wildlife habitat.

## Land Conservation Programs

The land conservation programs provide for analysis and dissemination of information on present land use, land potential and the extent of land degradation from a national perspective. The study team concluded that DOE's Lands Directorate is needed to maintain a multi-sectoral perspective on the overall stewardship of Canada's land resources and to recognize the various sectoral interests and competing claims for the use of land resources. However, the study team noted that land-use issues are frequently assigned low priority by the Department of the Environment and other federal departments, and questioned the division of responsibilities for land-resource activities within the federal government. The study team recommends to the Task Force that the government consider maintaining current resource levels and improving co-ordination of land-related activities. This might be done through such means as consolidation within the federal government to create a unit with sufficient expertise and identity to exert effective influence and to provide strategic advice to the federal government on land resource issues.

## Environment 2000

Environment 2000 was a seasonal employment program which operated from April 1, 1984, to March 31, 1985. Its objectives were to improve the Canadian environment through environmental conservation, to create employment for youth and older workers, and to increase public awareness of environmental issues. Although minor shortcomings were identified in the program, projects selected were technically sound, manageable and achievable and, in most cases, were completed on time and within budget. Benefits accrued to individuals, communities and the general public. The study team recommends to the Task Force that the government consider (re-)establishing Environment 2000 or a similar program when short-term employment generation is considered a priority. However, resources other than those of the Department of the Environment should be used and consultation with bargaining units about employment conditions should take place.

## OTHER MATTERS

The study team completed its work within the three months allotted. In spite of the short time-frame, however, we believe that the programs operated by the department were given sufficient investigation and analysis to meet the objectives of the study as stated in the Terms of Reference.

The members of the study team interviewed over 400 individuals and groups in the course of their investigations. Many were from the federal public service, but many more were representatives of provincial governments, the private sector, industry associations, public interest and native groups, universities and other non-government organizations (Table 1). These individuals provided critical inputs to the study, and their contributions were the basis for the majority of our recommendations. Time limitations were such that we could not meet with representatives of every stakeholder group, and some individuals whom we would have liked to interview could not be contacted.

Another important source of information for the study team was the large number of audits, evaluations, program reviews and special studies that have been carried out over the past decade on various components of the department. The self-evaluation process, when integrated with these earlier studies, has resulted in a thorough appraisal of the department as a whole.

The interview and evaluation review techniques were fundamental to achieving substantive results within the desired time-frame. Although the schedule precluded in-depth or detailed analysis, the study team feels that the current key areas of concern have been addressed. However, this does not in any way obviate the need for DOE to conduct further study of this analysis.

The study team would also like to acknowledge the excellent co-operation that we have received from the department. From the Deputy Minister on down, there is a recognition that changes are necessary and a desire to "put their houses in order". We believe we have established our credibility and objectivity with departmental staff; these facts augur well for the successful achievement of departmental objectives.

We should also like to acknowledge the effectiveness of the "self-evaluation" process in which six members of the federal public service (five from DOE, one from Fisheries and Oceans) served as study team members in conjunction with six members from outside government.

In the course of its work, the study team reviewed the findings of other study teams that have completed their assignments, to the extent that their work involved Environment Canada. Where a specific connection was identified, we have made appropriate comments. In most cases, our proposals are in full accord with those of other study teams; in a few cases there are differences and, in such cases, we have explained why our views differ.

# PROGRAM ASSESSMENTS

## AN INTRODUCTION TO PARKS PROGRAMS

### Background

The legislated mandate of Parks Canada, as it was paraphrased in its 1979 policy statement, is "to protect for all time those places which are significant examples of Canada's natural and cultural heritage and also to encourage public understanding, appreciation and enjoyment of this heritage in ways which leave it unimpaired for future generations". This mandate is carried out through a network of national parks, national historic parks and sites, and heritage canals. At this time, the total area held in the name of the Crown by Parks Canada is less than 1.5 per cent of the total area of this country. The other programs in this portfolio represent authorities to enter into agreements with other levels of government, associations or individuals for joint ventures in such activities as managing heritage rivers, restoring the façades of historic buildings, and co-ordinating development in regions containing some sites of national and others of regional historic interest.

The National Headquarters of Parks Canada is in the National Capital Region, but most of the service to the public is delivered at the park level. There are five regions with regional headquarters offices in Halifax, Quebec City, Cornwall, Winnipeg, and Calgary. Ninety per cent of the person-years in Parks Canada are located outside of the National Capital Region, and 64 per cent of the financial resources are controlled outside of Headquarters.

The actual expenditures during 1984/85 were $308 million, with revenues of $22 million; person-year utilization during that fiscal year was 5,095. The 1985/86 Main Estimates call for an expenditure of $303 million and 4,902 PY, with revenues of $31 million. This represents decreased buying power of 5 per cent, increased revenues of 43.5 per cent, all with a 4 per cent decrease in person-year utilization.

### Summary Assessment and Key Directions

Based on its research, the study team feels that the present mandate of Parks Canada is appropriate for the federal role, and should be confirmed. In terms of the future policy directions for Parks Canada, the central thrust is to shift the approach of Parks Canada from the acquisition of new parks and sites by the federal government alone to a focus on joint funding and shared management with other levels of government and organizations. In addition to this thrust, we have identified a number of changes that would decrease the net cost of operation, and others that would reduce irritants. These would not affect Parks Canada's ability to achieve its mandate, but would improve its contribution to other government objectives such as: economic development (largely through stimulating tourism); better federal-provincial relations; more client sensitivity; more economical management. Many of these changes may not result in large savings in the near future, but they do offer significant savings over the long term when compared with other approaches to respond to the growing national and international demand for protection of the natural and cultural heritage.

Ultimately, however, the overall level of resources allocated to the activities reviewed here must be a political judgement. There is a broadly based consensus across the country that the preservation and protection of natural and cultural heritage is an important activity, even in times of financial restraint. The flexibility comes in the level (quantity and quality) of service which will be provided to the public and in the timing for providing that service. The question is not a simple one because level of service is closely linked with that portion of the Parks Canada mandate that refers to public appreciation and enjoyment, which in turn is linked to the economic potential. Ironically, the protection part of Parks Canada's mandate can best be supported by integrating the parks, canals and historic sites into the economy of the region in which they are located.

## OPTIONS

The study team recommends to the Task Force that the government consider the following:

### A. Mandate

**Confirm the present mandate of Parks Canada and also confirm that the protection and preservation aspect of that mandate be paramount.**

There is widespread acceptance that Parks Canada provides Canadians with a network of national parks which is considered a model for many countries. The contribution of these parks to Canadian tourism is significant; for example, the Government of Ontario estimates that the direct contribution to the gross provincial product through tourism of the Rideau and Trent-Severn Heritage Canals is at least $1.2 billion per year. Roughly one dollar of direct visitor spending is generated for each dollar of program budget and, in addition, about 17 per cent of the government expenditure is returned in the form of direct taxes. Parks Canada is also a significant provider of jobs in all parts of the country including some severely depressed areas. We find a national consensus that the primary goals of Parks Canada should be to preserve and protect, and that while activities related to "enjoyment" should be given full weight in planning, they should not be carried out in a manner which would impair those primary objectives. The provinces generally place more emphasis on tourism and recreation with secondary interest on protection and preservation. Moreover, the provinces have no difficulty with the distinction between national significance and regional significance as applied to historic sites; this distinction forms the boundary between the federal and the provincial roles in that domain.

## B. Future Directions

**Alter the present approach to completing the national parks system by:**

**Completing the acquisition of only those five parks for which negotiations with provinces/territories are well underway* and keep to a minimum the expenditure for development of these parks until the fiscal climate is improved.**

**Acquiring additional areas only where (i) they are of national or international significance, such as unique topographic features or habitat for a threatened or endangered species, and (ii) they**

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* Bruce Peninsula in Ontario, Grasslands in Saskatchewan, Ellesmere Island and East Arm in the N.W.T., and the southern extension of North Yukon in Yukon.

**are under threat; even in these cases, Parks Canada should seek to acquire only enough territory to effect the level of protection required, rather than the total area which may ultimately be desirable for park management purposes.**

The above restraints on commitments for new parks until the fiscal climate is improved will honour existing commitments to provinces/territories; also, important new areas that come under threat will continue to be protected. The cash flow associated with such activities will be much lower than would be normal under present practice.

**Develop changes to the Parks Canada Policy which broaden the scope for co-operative ventures with other government departments, provinces, territories, municipalities, native peoples and non-government organizations for the acquisition, funding, development, restoration and management of future national and historic parks, historic sites, heritage rivers and all related activites.**

Canada's Park System is unique; neither the U.S. system with its distinction between wilderness areas and park areas, nor the European system with its emphasis on intensive management, is comparable. The system is an essential part of the tourism infrastructure, attracting visitors not only from other areas of Canada but from all over the world. At the present time, there are many forces that oppose expansion of the parks system including: financial constraints for the federal government; the increasing concern of other levels of government about transferring land ownership to the federal government; aboriginal rights and the settlement of native land claims. For these reasons, it will be difficult or perhaps impossible to expand the system significantly (beyond those parks for which planning is already well advanced) along past lines. Therefore, new approaches are required to meet increasing public demand for park areas, and the study team believes that a major expansion of the joint-venture approach now used in some areas will provide the solution. In any future agreements or major joint ventures, the federal government must be flexible with respect to management and the planning must be done on a regional basis to ensure that visitor services and activities are developed in a co-ordinated way to ensure that the preservation imperative can be guaranteed. Naturally, joint planning and management implies joint funding, which permits the federal tax dollar to go further. The Co-operative Heritage Area Program (EC-93) and the Heritage Rivers Program (EC-94) are excellent examples of this approach. In some cases, a federal park may be developed in association with a provincial park, so those areas that need full protection, or that would be classed as wilderness or semi-wilderness, fall within the national park while the area under provincial jurisdiction could provide the bulk of the visitor services. In some other cases, the cost of procurement could be shared with the private sector as has been proposed by the Minister for South Moresby.

**Open discussions, with those provinces in which heritage canals are located, directed towards reaching agreement for contributions towards the costs of operating the canals for recreation and tourism, with the goal of covering all operating costs.**

Heritage canals make very substantial contributions to the economies of a number of provinces and regions. User fees recover less than 10 per cent of the costs of operating the canals in support of heritage preservation, recreation and tourism. The goal would be to increase revenues through higher user fees and transfers to cover the total annual operating costs; some $12 million of such transfers would be required to achieve this goal.

**Review that aspect of government policy which exerts extensive control over senior managers rather than holding those managers strictly accountable for adhering to general guidelines.**

Regulation requires Parks Canada to deal with suppliers of goods or services through the "service" departments (Supply and Services, Public Works). While centralized purchasing can offer economies of scale, in some cases, the requirement that all purchasing take place through DSS increases costs to the taxpayer, increases the paper burden on public servants, and is a source of irritation to those communities and merchants located near parks from whom purchases could be made at equal or lower cost than through DSS. Similarly, while Parks Canada writes its specifications and identifies possible suppliers, the requirement to deal through the Canadian Government Expositions Centre adds 24 per cent to the cost and considerable time to the project. Moreover, in many cases, the engineering expertise required to deal with suppliers of construction services exists within Parks Canada; being forced to deal through Public Works is an unnecessary and expensive complication. The study team estimates that removal of the requirement to follow procedures such as those described above, thus allowing the selection of the least-cost alternative, would save at least $1 million annually (about 2 per cent of the non-salary O&M). Just as the government feels that deregulation of the private sector would benefit the economy, the study team is convinced that deregulation of the bureaucracy could pay similar dividends. This removal of tight central control would permit the application of strict managerial accountability, a move that would be popular with most Canadians.

**Take steps to reduce the time required to obtain effective project approval of major projects.**

Under ordinary circumstances, it takes 40 working days from the time of initiation to receive project approval; 24 of those days are within the department (Regional Office, National Headquarters, Assistant Deputy Minister, Corporate Level, Deputy Minister, Minister) and the remaining 16 within the Treasury Board Secretariat. These submissions are usually based on cost estimates obtained as a result of a tender call; such estimates are usually valid for 60 tender days (about 40 working days). Any delay beyond this acceptance period requires a re-negotiation of the proposed price. In some cases, the contractor will extend his tender price; in many others, the tendered price will rise. The Auditor General and the Treasury Board both consider such price increases as cost overruns; the study team feels that these are avoidable. An increase in the financial signing authorities delegated to the department could form part of the ultimate solution.

**Adopt the recommendations of the Real Property Study Team regarding Park townsites, major highways in Parks, and bridges, but not their proposal about transfer of canals to provinces.**

The Real Property study team is of the opinion that Parks Canada should not be in the town management business, and this study team concurs. Recognizing that the situation is very complex, and that the actual solution to the problem must depend on negotiation with the concerned provinces, we suggest that, as interim measures:

a. any lease extensions be for the short-term only until the situation is clarified;
b. costs charged to the lessor be increased at the first opportunity to something approximating a fair market value; and
c. to reduce the subsidy provided by all Canadians to those living in townsites, the cost of services provided be raised in a phased manner over three years from their present value to an appropriate fraction of their real cost. This is discussed in considerable detail in the Real Property study team's report.

Similarly, there are through-park highways and roads which would, except for the existence of the park, be owned, operated, and maintained by the provinces. These represent a disproportionate percentage of the Parks Canada assets value and expenses, in the view of the Real Property study team. That team suggests a transfer to the provinces as part of some broader federal/provincial fiscal review. The Real Property team also notes that should such transfers not prove feasible, full responsibility for funding, design, construction, operation and maintenance of highways and roads should be transferred to the appropriate department. We wish to add that Parks Canada should have a veto over siting and design matters for roads within park boundaries, irrespective of which jurisdiction has the responsibility for those roads.

The Real Property study team recommends that transfer of the Heritage Canals to the provinces should be considered. This study team does not agree with that recommendation; these canals are an integral part of the heritage protection aspect of the Parks Canada mandate. We also note that the operation of these canals for recreational purposes fits well within the "enjoyment" portion of the Parks mandate. Moreover, we feel that the present combined responsibility for preservation and operation is cost-effective, and that the contribution to tourism of the areas concerned is significant.

> **Study the Canada/US and federal/provincial implications of turning the Sault Ste. Marie canal into a historic park, if possible by the end of fiscal year 1986/87, and further, change the designation of the Lachine canal from a heritage canal to a historic park.**

The Sault Ste. Marie canal is not required for marine transportation because there is an alternative, the St. Lawrence Seaway system. This could increase the amount of traffic served by the Seaway to an unacceptable level and may require renegotiation of any earlier agreement regarding it. On the other hand, removing its operating status could save about $2 million annually. The changed designation for the Lachine canal is suggested to make it very clear that there is no intention in the future of restoring operating status to that canal at what is estimated to be significant capital cost. The other possibility that should be considered is expediting the transfer to other jurisdictions of responsibility for bridges over heritage canals.

**Study:**

a. **whether or not in some cases historic sites and buildings could be restored to a lower level of authenticity without impairing their integrity or contravening international standards; and**

b. **whether or not visitor reception centers and other administration buildings at parks are over-designed.**

Although the evidence gathered by the study team on the items raised was inconclusive, we nevertheless feel that there is the possibility in both areas of saving capital expended both in the initial restoration or construction phase, and then subsequently when recapitalization is required. The comment that "Parks Canada goes first class" (with respect to construction) came from more than one source during the research leading to this report. These studies may require the services of external consultants.

**Eliminate duplication of expertise and responsibility between the National and the various Regional Headquarters with any appropriate actions reflected in the operational plan of Parks Canada for 1986/87.**

The study team noted symptoms that suggest there may be an excess of "functional" supervision between the Regional Offices and the National Headquarters. For example, a draft Treasury Board submission for effective project approval of a major project must pass through many hands between the originator (presumably the project manager) and the Treasury Board; the number of approvals required between the originator and the Assistant Deputy Minister may in some cases approach or exceed 20.

**Undertake the appropriate federal/provincial consultation which will lead to the legislative changes required to transfer the National Battlefields Park to the Quebec Region of Parks Canada for operation and maintenance.**

The park is operated under the National Battlefields Act by a commission. Integrating the operation of the park with the other activities of the Quebec region could lead to savings of 16 person-years and in excess of $100,000 annually.

**Ensure that:**

**a. all new visitor services associated with accommodation, food or recreation be market driven, that is to say operated by others under licence, with a share of the revenue accruing to the Crown, installed and operated under strict guidelines established by Parks Canada with resources that do not originate from the department; and**

**b. all possible existing services be converted to that status as soon as possible.**

The study team recognizes that National Parks, by their existence, generate tourism, and tourists require services. In the past, Parks Canada has attempted to install and operate those services from within its allocation; other government departments and other levels of government have criticized Parks Canada for what they feel is inadequate attention to serving tourism. The study team feels that financing of such development should come from the federal/provincial ERDA agreements, from the non-government sector or from other sources. Furthermore, the study team feels that where it is not possible to privatize through licensing, activities should be contracted-out where it is cost beneficial.

**Identify innovative ways of raising revenue.**

As part of the new government policy, Parks Canada has raised its entrance and user fees for the first time in several years. This is expected to increase its revenue by over 40 per cent, but the study team feels that there are other avenues which should be investigated. For example, revenues generated by the Heritage Canals are largely from boat operators who use the canals; many more people visit the canals by car than by boat, and it may be possible to introduce some user fees for the land-based activities. Similarly, it may be feasible to lease portions of historic buildings to appropriate caterers for events such as period dinners after the ordinary hours of operation at the site. Marketing studies could identify such possibilities.

> **Call for proposals from the non-government sector for undertaking under contract, as pilot projects, examples of activities now carried out by Parks Canada staff. In the event that acceptable proposals are not received, and review suggests that the principal reason is a lack of capability outside government, then activities to encourage the development of a capability should be identified and undertaken if the response from the non-government sector to such initiatives is positive.**

The study team recognized that the department was looking at ways of having activities carried out in the non-government sector in response to the government's clear policy on contracting-out. To give a focus to these activities in Parks Canada, pilot projects are suggested as an effective way of establishing feasibility without requiring the divestiture of capabilities which may be required in the future. In some cases, there may be no reasonable proposals. There are many possible reasons for such an occurrence; if it is because the capability does not exist, and there is an interest in developing it, then initiatives to assist it should be undertaken.

## C. Reducing Irritants Further

> **Identify how to phrase Orders-in-Council in such a way as to give Parks Canada the flexibility to set fees for services at the market level appropriate to the region, the season and the day of the week.**

The study team has identified national rates for the provision of services by Parks Canada as a major irritant. Where Parks Canada rates are lower than the regional market would suggest, provinces and municipalities as well as the non-government sector claim unfair competition. Where Parks Canada rates are higher, nearby municipalities and the non-government sector claim that potential superintendents should have the freedom to establish rates in keeping with the regional and seasonal markets. This would not only reduce the irritant aspect of this problem, but would solve two other problems as well. First, the inflation factor would be covered automatically without an Order-in-Council, and would prevent major disruptions such as was created by the large increase in 1985 (the first in many years). Second, superintendents would have a tool for adjusting the loading on various visitor services through creative pricing.

> **Following consultation with stakeholders such as the Bargaining Units in the federal public service, consider a revision of the rules applying to the hiring of seasonal staff to permit the paying of prevailing regional rates appropriate to the season.**

The personnel policy of the government requires Parks Canada to recruit seasonal staff essential for its operations into classified positions at pay scales established by national collective bargaining. In some regions of the country, and particularly in rural areas where many parks and canals are located, these pay scales are considerably in excess of prevailing regional pay rates, and this is an irritant to the non-government sector as well as to other levels of government. The payment of regional rates would make it possible for Parks Canada to hire more people at no greater cost, if it chooses to do so. However, it is to be expected that the labour movement, especially the public sector unions, would strongly oppose such a move as they would perceive it as undermining the principle of national standards which they have won only after many years. While we can appreciate their concern, we feel that the government should explore the prospect of introducing regional rates for seasonal employees with the bargaining units concerned. We note that some trade-offs may be necessary to attract their support.

> **In making appointments to the Historic Sites and Monuments Board, ensure that the Board includes an appropriately qualified person from one of Canada's native peoples to ensure that the history of Canada's native peoples is reflected more adequately in future Parks Canada activities.**
>
> **Consult with all of the major organizations of Canada's native peoples on how future national parks, national historic parks and national historic sites be selected and managed, along with possible modifications to the current situation in existing parks and sites.**

Canada's native peoples represent a major part of the history of northern Canada. Nevertheless, the history of native peoples is not adequately represented in the historic parks and sites program of the department, and their role in the planning and management of existing parks has been minimal. The study team feels that both these situations should be rectified. For the historical aspects, the proposed addition to the Historic Sites and Monuments Board will be an improvement, and Parks Canada should review its system plan for Historic Parks and Sites to ensure that themes related to native peoples are adequately represented. For national parks, not only will a review of existing policy and practice be required, but native people must participate in the development of management plans and their implementation. Given that the creation of a national park will attract visitors, it is essential that parks in the North be planned both to protect native cultures and to support the economies of native communities.

**Review, and following public consultation, define more carefully the zone system used in park management plans, with particular attention to the appropriate concepts of wilderness areas and of service areas.**

Parks Canada policies for management of parks depend upon a set of five zones that provide greater and lesser degrees of protection and permit more and less tourist development. After nearly ten years as formal policy, the need for review has become apparent, particularly with respect to the zones for wilderness areas and for tourist services. The zones therefore require better definition based on consultation from all parties interested in the parks.

**Proceed only with great caution in the area of marine parks, and in particular avoid creating new conflicts in areas where commercial fishing occurs.**

The concept of marine parks is contained within the system plan for the National Parks Program of the department. Moreover, there is a growing demand for varied recreational uses of coastal regions, including recreation based on observation of the ocean floor. Unfortunately, the same features that make a region attractive for a marine park usually also make it an important fishing ground. The potential for conflict is high, something that Parks Canada has recognized and has tried to reflect in the fairly extensive public consultation. In spite of this, the study team finds that public concern remains high; this fact, together with the need to defer expansion to the extent possible, suggests a "go slow" policy for marine parks at this time.

**Engage an appropriately qualified consultant to study whether or not the activities of the artifacts conservation laboratory are appropriate in the larger Canadian context.**

In the view of the National Museums Corporation and some others, Parks Canada is wasting scarce resources in some of its restoration activities. This comment is based on the fact that there is a shortage of skills and other resources for heritage restoration in Canada. There are two world-class laboratories in Canada doing this work, one of them operated by Parks Canada. It has been suggested that Parks Canada is restoring artifacts of types that are already well-represented in museums, while other elements of the Canadian heritage are deteriorating because there are no resources available to restore them. The study team does not have the expertise to take a position on this issue, but feels that it should be studied.

**Amend the Parks Canada Policy to exclude explicitly the establishment of national urban parks where there is no intrinsic heritage or unique ecological value to the site.**

The study team looked at the urban national parks which have been developed in several cities of the United States, the like of which have been proposed by some people for Canada. We feel this proposal to be inappropriate for Parks Canada. This is not to say that historic sites of national significance which happen to be located within cities should not become part of the Parks Canada system; many already are; nor are we suggesting that those parts of history not already commemorated be ignored; rather, the deliberate creation of a park area within Canada's major cities for the purpose of presenting natural or cultural themes should be left to other jurisdictions.

## D. Depreciation of Capital Assets

**Take an immediate decision on the submission from Parks Canada on the recapitalization which has been under consideration for some time and aim to achieve a solution to the problem in time to be included in the**

**operational plan and strategic overview for 1986/87 and onward.**

It is widely accepted both within Parks Canada and outside that the recapitalization activity (preservation of the capital assets now held) is seriously under-resourced. In the past, a large share of the capital allocation of Parks Canada has gone towards acquisitions; the federal/ provincial agreements associated with these acquisitions give first call on the capital allocation to activities associated with this expansion. The study team feels that this problem must be addressed immediately because a number of the capital assets of the Crown are depreciating at an unacceptable rate, and an inordinate amount of the operating budget must be used in ongoing maintenance just to slow down the process.

**Notes:** 1. The study team does not feel qualified to comment on the recommendation of the Real Property Management Team that the Facilities Management Branch of the Department be transferred to Parks Canada.

2. We noted the comments of the Regulatory Programs Study Team on regulations applying to activities in Parks. We feel that such regulations are necessary to ensure that the protection and preservation portions of the mandate are achieved. We also feel that a further public review of the Parks Canada Policy at this time would not be productive. After extensive public review, it received all-party support by the Standing Committee on Fisheries and Forestry, and was presented to Parliament as recently as 1979.

3. A number of other proposals are attached to the individual program profiles.

# NATIONAL PARKS

## OBJECTIVES

To protect for all time representative natural areas of Canadian significance in a system of national parks, and to encourage public understanding, appreciation and enjoyment of this natural heritage so as to leave it unimpaired for future generations.

## AUTHORITY

Key: National Parks Act, R.S., c. 189, s. 1 (1974)
Parks Canada Policy (1979)

All National Parks require an Act of Parliament for their establishment or for a change in status.

## DESCRIPTION

National parks are dedicated to future use as well as to the present generation. Impairment by overuse, improper use and inappropriate development is avoided. In some cases, (notably commercial development of natural resources), this involves absolute prohibition. In most cases, this objective is met by two other mechanisms:

a. a formal system of regulations developed and enforced by Parks Canada; and
b. an informal system of zoning, described in Parks Canada Policy, to indicate regions where more and less human activity can be accepted.

Other policies, such as one indicating that naturally occurring processes (e.g., fire, insect infestation) will in most cases be allowed to run their course, are intended to minimize human interference with park lands.

In most national parks, visitors will find active information and interpretation services as well as a variety of outdoor recreation opportunities and accommodation facilities ranging from hotels to campgrounds and shelters. These services are provided to promote enjoyment and understanding of the park's natural values. In some national parks, facilities such as swimming pools, downhill skiing facilities and golf courses have been built. These facilities date from a period in which the emphasis was on development within the parks, and with a few exceptions resulting from agreements with provinces, no additional facilities of this kind are planned. As a general policy, wherever feasible, commercial services and facilities will be located in communities adjacent to national parks.

Parks staff also conduct resource management programs, provide for visitor safety, maintain program infrastructure and have police authority to enforce statutes and regulations in the park.

Because of their size, permanent population, year-round services and extensive municipal infrastructure, Banff and Jasper are unique park communities which have the tax base necessary to support local self-government. No new towns are planned for National Parks.

The National Parks system now consists of 31 parks covering over 140,000 square kilometres (1.3 per cent of Canada's land mass). The eventual size of the system is defined by a plan developed through a consultation process and presented to Parliament. This plan describes 39 natural terrestrial regions, in each one of which it is proposed that at least one park be established. Currently 20 of the 39 regions are represented. The missing regions include 11 in the South and 8 in the North. In addition, plans are well advanced for the extension of this concept of terrestrial regions to marine environments with the ultimate goal of establishing national marine parks. Draft policies have been written, marine regions identified, some public consultations held on draft policies and a feasibility study initiated with the province for a possible first marine park in New Brunswick. Finally, but less advanced, are plans for a federal/provincial system of national landmarks, which would protect sites of unique natural significance that are much smaller in size than typical for a park, and heritage trails comparable to heritage rivers.

In addition to land, Parks Canada maintains over 300,000 square metres of building space and some 2,500 kilometres of highway (including 324 km in the Trans Canada system) associated with the national parks program. Together with other facilities, capital assets in the developed areas of the parks are valued at $3 billion (1984). Studies have indicated that the annual rate of expenditure for recapitalization should be 1.6 per cent of the asset base, but to catch up on work that has been allowed to lag, Parks Canada has made a submission for 2.2 per cent. Of the capital asset base, roads and bridges form

40 per cent of the value and require 27 per cent of the annual maintenance expenditures. Almost 50 per cent of the capital asset base and 71 per cent of the leasehold properties, are in the Western Region of Parks Canada (British Columbia and Western Alberta); this Region also collects about 80 per cent of the total revenues of Parks Canada, mainly from the leases.

Most new parks are established by means of federal/provincial or federal/territorial agreements. One park in the North is being established as part of land claims settlements, and others may be established in this way.

Although the focus of the National Parks program is on on-site experience, extension services are also provided for off-site use by means of film, video, print and other media. Some extension services are provided on a co-operative basis with groups outside government. Many of these same products serve to promote tourism and to stimulate visits to the parks.

Each national park is administered according to a management plan approved by the Minister of the day; these contain a statement of management objectives and the means and strategies for achieving them. The level of detail is confined to the definition of the type, character, locale of developments, and the provision of guidelines for more detailed plans concerning resource management, interpretation and visitor use. Management plans are prepared with public participation and are subject to periodic review.

Research programs are carried out in the national parks to learn more about the natural resources of the park and about visitor habits, needs and satisfaction. In the past, much of the wildlife research was carried out by the Canadian Wildlife Service; this service has been terminated. Parks Canada has established a 3-year pilot program with the University of Waterloo under which Parks Canada provides $15,000 per year and the salary of a liaison officer with the objective of stimulating interest in and providing assistance to research on topics of interest to Parks Canada.

The national parks system is managed by means of a headquarters operation in Ottawa and five regional offices as follows: Halifax for Atlantic Canada; Quebec City for

Quebec; Cornwall for Ontario; Winnipeg for Manitoba, Saskatchewan, eastern Alberta and both territories; and Calgary for western Alberta and British Columbia. Each park is managed by a superintendent.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | 74,150 | 80,503 | 80,612 | 80,002 |
| O&M | 27,883 | 26,779 | 26,241 | 25,914 |
| Grants | 2,210 | 2,315 | 2,274 | 2,274 |
| Capital | 62,716 | 54,960 | 63,171 | 62,308 |
| **TOTAL COSTS** | 166,959 | 164,557 | 172,298 | 170,498 |
| Revenue | 19,765 | 28,085 | 28,085 | 28,085 |
| Person-years | 2,594 | 2,582 | 2,633 | 2,636 |

**Notes**

1. The increase in salaries after 1984/85 is a result of signed labour agreements and of adjustments to the base for other personnel-related costs.

2. The decrease in capital for 1985/86 reflects reductions to the Parks Canada capital expenditures program as a result of the November 1984 economic Statement.

**BENEFICIARIES**

Many benefits are derived from the existence of national parks. They range from the knowledge that future generations will be able to experience wilderness areas of unsurpassed beauty to the immediate value of jobs and business opportunities created. In an attempt to provide some structure to this enormous range of benefits, it is useful to divide them into three types: tangible, quasi-tangible and intangible.

a. Tangible benefits accrue to those individuals, businesses and communities that receive income directly or indirectly as a result of the establishment and operation of a park. The food and beverage, accommodations and transportation industries are particularly important beneficiaries. National parks play an important role in the economies of the regions in which they are located. Some are located in regions of high unemployment and, in such cases, the combination of regular and seasonal hiring and expenditures by Parks Canada, together with tourist spending, can play a predominant role in the local or regional economy. Tangible benefits are described further below. Expenditures by the National Parks program are uneven across the country with 43 per cent in the Western Region. However, the benefits extend beyond the immediate region of the park because of the travel undertaken to get to them and because of the outdoor recreation equipment required for at least some forms of activity in the parks.

b. Quasi-tangible benefits are those that are in principle measurable, but for which measurement is either difficult or expensive. The most obvious benefit in this category includes the enjoyment and education gained by visitors to the parks (20 million in 1983), as reflected in, among other things, their willingness to pay to visit them. Other Canadians may express a willingness to pay for the option of visiting a park some time in the future or simply for the pleasure of knowing that the parks exist. Other forms of quasi-tangible benefits include the role of park areas in protecting watersheds and therefore regulating the flow of downstream rivers, reducing siltation, etc.

c. Intangible benefits are those that cannot, even in principle, be measured. Critical among these would be the preservation of Canada's natural heritage and the consequent opportunities provided by national parks for base line research, that is for a means for comparison with areas more heavily affected by humans. Other intangible benefits lie in the protection of the gene pool and of endangered species.

An economic impact model of the Parks Canada program based on Statistics Canada input-output tables has been developed and shows that the value added directly and indirectly to the Canadian economy through Parks Canada activities increased by $820 million and generated almost 29,000 additional person-years of employment in 1982/83. Foreign visitors spent over $40 million in visits to national parks. Taxes resulting from the Parks Canada program returned $41 million to the federal government and almost $100 million to other levels of government. On a rough basis, one dollar of direct visitor spending is generated for each dollar of program budget.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

In 1983/84 two extensive reviews of the program were undertaken: the comprehensive audit by the Auditor General and the A-base review.

a. In contrast to the usual outcome of an A-Base review, this study indicated that Parks Canada is under-resourced by about 300 person-years to maintain and operate the existing parks and sites. The study also indicated the need to increase the program's budget to rebuild or replace older facilities which had deteriorated during the period of rapid system expansion in the 1970s. These problems are being addressed by improvements in management systems, particularly for maintenance and by the development of a long-term plan for recapitalization for Treasury Board consideration. There has been no increase in either person-years or budget since the A-base review.

b. The Auditor General's report to Parliament criticized Parks Canada for being ad hoc and opportunistic in new park development (and as a result neglecting the state of existing parks). Parks Canada both accepts and rejects this criticism. On the one hand, it argues that it must be ready to move when the circumstances for establishing a park arise, and on the other hand it argues that park acquisitions are made in accordance with a system plan.

## OBSERVATIONS

There is no question but that Canada's national parks are nationally and internationally recognized as natural heritage areas, and in addition to their primary protective role serve as major attractions for the tourist industry, provide recreational and educational opportunities for Canadians, and support the economy of the regions in which they are located.

National parks are exceptionally strongly supported by the Canadian public. In a 1983 study by the Department of Communications, it was reported that, "Two areas stand out from others as being important for federal funding in terms of receiving homogeneous support across the country, the preservation of our past heritage and support for the exhibition of our heritage in museums, parks and historical sites".

National surveys indicate that about one-third of adult Canadians are users of national parks. On the average, the typical visitor is somewhat younger, better educated and higher in income than the average. Canadians represent over 80 per cent of the visitors to national parks; of the remainder, two-thirds are Americans. About 75 per cent of visitors stay in central areas of parks, 15 per cent engage in light camping and 10 per cent go into the back country. There is evidence to suggest that the latter two shares are increasing, and that wilderness will become increasingly marketable on an international scale. On the other hand, the Canadian population is aging, and demands are growing for parks to serve specialized segments of the population, such as the physically handicapped and the aged.

Parks Canada appears to have gone through a difficult period that ended eight or ten years ago. During this period it was seriously deficient in its recognition of the need for integrating parks with the local economy and the local culture. Recent changes in policies, selection of staff with a better understanding of planning as a human process, and adoption of public consultation as part of park planning have gone a long way toward rectifying this situation. However, the legacy of past practices, and some continuing deficiencies (or perceived deficiencies) hinder Parks Canada from achieving its objectives. Existing conflicts of note occur with Tourism Canada, which argues for substantially more development in parks than Parks Canada is generally willing to accept; the mining industry, which argues against land withdrawals, particularly in advance of fairly detailed mineral surveys; commercial fishermen who fear their livelihood will be threatened by marine parks; some provincial authorities who want more fire and insect control in national parks in order to protect provincial forests; and, ironically, some conservationists who argue that, particularly in the North, the objectives of conservation are better served by not establishing a park (given the need to justify the park by ensuring that visitors arrive). On the other hand, native people have generally become supportive of parks proposals as a way of protecting wildlife resources for their own use and as a reflection of the fact that Parks Canada has demonstrated that it can work effectively in concert with ongoing land claims negotiations.

Tourism Canada has argued that Parks Canada is misinterpreting its mandate by an over-emphasis on protection to the detriment of maximizing the potential for enjoyment through greater tourism. Tourism Canada believes that Parks Canada is seeking to satisfy the needs of only a small minority of potential users of parks, that it is ignoring modern technology in the provision of tourism facilities inside parks, and that it has no market analysis on which to base its decisions with respect to investment in parks. This view is not widely held.

The key to the establishment of new parks, whether in the South or in the North, whether terrestrial or marine, whether dealing with provincial governments or native peoples, is how well the park proposal will fit with the desired forms and degrees of economic development.

Parks in the North must recognize the needs of Canada's native peoples. Some issues have been resolved but many remain outstanding. With respect to the former, it is now accepted that renewable resource harvesting for domestic use by native peoples will be allowed to continue within new national parks, though in established ones, such as Wood Buffalo, the earlier rules will apply. Also, Parks Canada has been making a serious and, it would appear, successful, effort to ensure a large share of native employment in northern parks.

Most of the issues that are not yet resolved can be subsumed under the theme of shared management. With increasing determination, native groups are asking not merely for some of the returns from a management system established elsewhere but for a deep and continuing involvement in establishing that management system. In part, this thrust is parallel with one in the South for parks to allow for the development priorities of the regions in which they are located, but it also reflects in part a determination to preserve a culture as well as an ecology. As a result of this thrust, among numerous others, the settlement of native land claims is a prerequisite for any significant park development in the North.

While by no means regarded as perfect, there is wide agreement that Parks Canada operates one of the best public consultation programs in the federal government. However, the four Mountain Parks (Banff, Jasper, Kootenay and Yoho) public consultation process, admittedly a complex one, appears to have gone seriously astray. This study team does not have the time to sort out the diametrically opposing claims, but failure to reach some accord in this central debate would have serious consequences. (Whereas Tourism Canada states that current plans indicate that Parks Canada is at last recognizing the development potential of parks and of the role for "demand-driven" park development, conservationist groups state that with its latest plan Parks Canada has destroyed ten years of work that went into building a non-confrontational public participation process.) Clearly, Parks Canada must resolve the dilemmas of both process and substance raised in the four Mountain Parks hearings.

In many senses, the most important ways in which Parks Canada makes parks available to people are covered by the broad term "interpretation". Two of the programs cut in November 1984 have severely constrained unique aspects of Parks Canada's interpretation program. The research done by the Canadian Wildlife Service was the basis for wildlife interpretation and also for the information needed to manage wildlife in the parks. The guided nature walks were an example of the kind of interpretation that can only be provided on site.

Two other study teams made observations relevant to the national parks program:

a. The Real Property study team focused on highways and national park towns; proposals are generally consistent with our findings.

b. The Regulatory Programs study team focused on the extensive regulatory framework that is inherent in the current operating practices of Parks Canada.

c. The Regulatory Programs study team also mentioned the option of undertaking a major review with public consultations of parks policy. In view of the extensive public consultation prior to publication of the existing policy, and the fact that those groups most opposed to the existing policies are also most skeptical of the consultation process, this study group could not support this option.

Most provincial and territorial governments contacted indicate that they are reasonably or very pleased with the activities of Parks Canada and with the degree of co-operation from Parks Canada officials. Those provinces without regional offices in their capital cities indicate that there is some lack of communication and that, as a result, problems sometimes take too long to resolve. However, apart from those national parks now under active development (Bruce Peninsula, Grasslands), none of the provinces expect any significant expansion of land devoted to national parks. They would like to see more sites smaller in size. The territories do anticipate a major expansion of national parks in the North, but want to ensure that they are involved in planning and management.

## ASSESSMENT

The stated objective of this program is valid. Though not as clearly stated as possible, it has a legislative base in the National Parks Act and is based on a long tradition. The objective is strongly supported by the vast majority of Canadians.

More particularly, the objective of placing protection in a paramount position, as implied by the National Parks Act and as made explicit by National Parks Policy, is also valid and accepted by most Canadians. This should not be read as precluding many kinds of development, nor as indicating that the current balance between protection and other objectives in the Parks program is appropriate, but as indicating the need for an ultimate judgement based on whether the natural area will remain unimpaired.

The objectives of the program are, or are not, being achieved depending upon the interpretation one puts on the word "achieved". From the perspective of protection, the program is achieving a substantial degree of protection in those areas within the national parks or national park reserves, but there remain important areas of national ecological significance that are not within park lands. From the perspective of enjoyment, there is disagreement as to the appropriate level to which Parks Canada should go in making natural areas accessible to people, and in allowing facilities to be built for those people.

Apart from the inadequacy of funds for maintenance and recapitalization, the most common complaint from park superintendents is the tight control under which they operate, in effect that they are not permitted to manage the parks as well as they know how. (This complaint, it should be noted, contrasts sharply with the view from headquarters and regional offices to the effect that park superintendents have full rights and responsibilities as managers and that the chain of command is very short.) This problem has several sources -- some outside the control of Parks Canada but others, including excessive functional guidance (probably at the regional level), within its control.

Questions have been raised about the high cost of some facilities, such as visitor reception and administration centres, built by Parks Canada. They are commonly described as Cadillacs when Chevettes would do. Because of time constraints, the study team has had only a limited opportunity to judge this situation, but its assessment is that there is justification for the concern. It would appear that, in at least some cases, simpler and less expensive, but equally tasteful, structures would have been adequate.

Self-assessment is also useful. At a search conference in February 1985, a group of parks officials and outside participants identified the following problems as exacerbating those caused by scarce resources: absence of flexibility in planning, centralized management systems, excessive role for regional offices, inadequate number of women in management, and poor communications with local communities. In a subsequent session of the same conference, it was agreed that Parks Canada has a "preconception that the world should accept that Parks Canada is always right." It is significant that these problems were discussed in a context of looking forward to the coming decades with optimism. The Action Plan proposed at this search conference is relevant to much of our study.

## OPTIONS

Given government policy to protect natural areas of national significance, there is no alternative to some program of this kind, nor is there any major option to continued federal ownership of the park system. No other level of government is urging that national parks be transferred to them. Provincial parks emphasize recreation rather than preservation. While there is some overlap in that national parks provide opportunities for recreation as well as for preservation, and provincial parks serve to preserve natural areas as well as to provide for recreation, these overlaps are the inevitable result of multiple use and do not deny the basic difference between mandates. The high costs and impossibility of collecting revenues for many of the benefits preclude private ownership of parks for all but very special (and very small) areas. Finally, federal ownership gives Canada a leadership role in heritage conservation on the international scene.

Notwithstanding the foregoing, devolution of services within national parks to the private or non-profit sectors is possible and has, as a matter of policy, been actively pursued by Parks Canada for about a decade. Most of the facilities that generate profits have already been privatized and others are operated under lease.

**Note** The overall purpose of the following is to shift the thrust of the national parks program in any expansion from federal ownership to shared ownership and joint management. In the South, provinces and perhaps non-profit groups would be the co-operating agencies; in the North, territories and native organizations would be the co-operating agencies. While this shift does not offer large savings in the immediate future, it promises very large savings in the longer term compared with any other way to meet the growing demands for extension of the national parks system. Ultimately, however, it must be recognized that the question of increasing or decreasing the resources devoted to national parks is a political judgement, not one that can be solved by analysis.

In view of the foregoing, the study team recommends to the Task Force that the government consider the following proposals:

a. The National Parks program continue to pursue its current objectives. In order to underline the mandate of Parks Canada in this respect, the government should reaffirm as soon as possible that the maintenance of the ecosystem within parks in an unimpaired state is the primary objective of national parks. The government should indicate that other federal policy objectives can be supported, but that they are contingent upon the primary objective being met.

b. Proposed expansion of the national parks system continue only for those parks where negotiations are already well advanced. In the South these include Grasslands and Bruce Peninsula in Ontario; in the North, Ellesmere Island, the East Arm of Great Lake Slave, and the southern extension of North Yukon. Even in these parks, development expenditures should be kept to a minimum until financial constraints are less severe. Further expansion of the park system should be re-directed along lines indicated elsewhere in this report and should in no case be at the expense of maintenance requirements in existing parks.

c. Within the next year, the Treasury Board respond to Parks Canada's proposed five-year plan for recapitalization of the built environment at existing parks. This plan aims at restoring built assets to an adequate level of maintenance and at defining the level of recapitalization that will be required on an ongoing basis thereafter. Further, Treasury Board should insist that a controlled allotment be segregated for the purpose of supporting (and protecting) this level of maintenance in the future. This allotment would thereafter have to be adjusted whenever a new national park is established.

d. All areas within national parks that have permanent townsites with year-round residents be turned over to the provinces by 1990. In particular, this study team concurs with the proposals of the Real Property Management study team with respect to completing the protracted negotiations involving the devolvement of Banff and Jasper to the province of Alberta, along with the plebiscite required by federal/provincial agreement, by April 1, 1990. This study team also concurs with their proposals for raising lease rentals and charges for municipal services to full market levels over the same period with a minimum of political interference. If for some reason devolvement proves infeasible, these communities must, as a minimum, become self-supporting to eliminate the financial and administrative burden on Parks Canada. After an interim period, savings should reach $2 to $3 million each at Banff and Jasper, and perhaps as much again for the remainder of the national park towns.

e. By April 1, 1990, all paved roads within national parks, except for those lying within the parks which are designed primarily to allow the visitor access to different sites, be excised from the parks and transferred to the provinces. This issue has been discussed at length by the Real Property Management Study Team, and this study team concurs fully with it, including the back-up provision that, in the event transfer to the provinces proves infeasible, responsibility for these roads should be transferred to Transport Canada (with Public Works Canada providing design and construction services). All this study team would add is that the authority to which the roads are devolved be required to come to an agreement with Parks Canada about appropriate siting and design characteristics.

f. Over the next two years, Parks Canada develop an alternative system for setting priorities in the establishment of new parks. The basis in terrestrial and marine regions needs not be ignored entirely, but the new approach should put more emphasis on two other criteria:

- the unique natural features (be they physical or biological) that require protection; and
- the nature and extent of the threat to those features.

The alternative framework should identify the core areas that need full protection, and then identify the larger area around the core that would be desirable or useful to manage. Various forms of ownership, shared management and land uses should be considered for the larger area surrounding the core. (N.B.: This approach is broadly consistent with those suggested at the search conference referred to above and in Northern Conservation Strategy recently published by DIAND.)

g. In addition to the basic change in the planning process suggested above, Parks Canada also initiate one-year studies to:

- Identify and assess alternative techniques for raising funds, including the use of donations, bequests, and special land acquisition funds. In so doing, Parks Canada should also identify means by which undesirable developments on prospective park lands can be halted while funding is sought from new sources. Alternatively, Parks Canada could consider ways to take interim action itself to protect threatened resources of national significance.

- Develop schemes and techniques for integrating new park areas, wherever they are located, into the local and regional economies to the extent possible without violating the primary mandate. This study should focus on those opportunities related to the presence of the park and exclude any that involve non-park-related regional development, which is more properly the role of DRIE.

- Review the limitations on tourist-oriented developments in the high-impact areas (Zone Five) of existing parks to see whether there are ways to accommodate more tourists or a wider variety of tourists without significant impairment of other zones. Tourism Canada should be asked to undertake a survey to establish what demand exists for expanded services in the zone five area of particular parks, what could be the cost of meeting those demands, and a reasonable source of funding to undertake appropriate activities.

h. Before any major capital expenditures are undertaken for visitor or administrative facilities in national parks, Parks Canada go to Treasury Board with a suggested process, possibly involving outside judgement, by which Parks Canada's proposed capital expenditures on facilities can be reviewed in terms of scale, quality and cost.

i. Parks Canada be instructed that, as of the summer of 1986, guided interpretative walks will once again be permissible provided that Parks can find the resources within its existing budget.

j. Parks Canada be instructed to move toward market pricing in both entry and user fees (see Overview). As an experiment, in the summer of 1986 superintendents should be given a range within which they are free to set fees with variations permissible by region of the country, by site within one park, and by time of the week or year. If the experiment proves successful, the necessary authorities for introducing flexible pricing on a national basis must be obtained.

k. **Within one year Parks Canada define the five zones it uses in developing park management plans more carefully, and provide clear examples of what kinds of facilities are and are not appropriate in each. The draft definitions themselves should be made available for written public comment and, once final definitions are agreed upon, they should be published and used in all subsequent planning processes.**

## NATIONAL HISTORIC PARKS AND SITES

### OBJECTIVES

a. To protect for all time Canada's historic heritage associated with persons, places and events of national historic significance in a system of national historic parks and sites.

b. To commemorate other persons, places and events of national historic significance with plaques, monuments or the restoration of buildings under cost-sharing agreements.

c. To increase public understanding of Canada's historical heritage through presentation of historic themes by activities and displays at national historic parks, authenticity of restoration, and accuracy of texts on plaques and of information activities.

### AUTHORITY

Key: National Parks Act, R.S., c. N-13 (1974) Part II (10)
Historic Sites and Monuments Act (1952-53) c. 39, s. 1 as amended in 1977
Parks Canada Policy

### DESCRIPTION

The Historic Sites and Monuments Act establishes the Historic Sites and Monuments Board of Canada to advise the Minister of the Environment on the national historic significance of persons, places and events, and on appropriate ways to commemorate these. This activity is described in the program "Historic Sites and Monuments Board".

The majority of nationally significant places are commemorated by means of a plaque or monument; approximately 880 have been erected to date. In other cases, Parks Canada has entered into cost-sharing agreements with other levels of government or private non-profit associations, for the restoration and operation of buildings of nationally historic significance. This arrangement is described in the program "Agreements with Provinces, Municipalities and Private Non-profit Organizations for Historic Sites".

Places of exceptional significance which are considered worthy of preservation by the Historic Sites and Monuments Board are acquired by Parks Canada. Restoration and interpretation programs are developed to inform the public about the historical person, event or place which is being commemorated. At this time, approximately 100 national historic parks and sites have been developed, or are under development, or are awaiting the identification of resources to permit development. National historic parks and sites attracted nearly 6 million visitors in 1983/84.

Parks Canada enters into agreements with co-operating associations to undertake appropriate activities beyond those for which the department is allocated resources. This activity is described in the program "Co-operating Associations".

National co-ordination is carried out by the National Historic Parks and Sites Branch at Parks Canada Headquarters. Archaeological and historic research activities which lead to the definition of appropriate themes for presentation at a park or site are centred at Headquarters. Laboratories for conservation and restoration are also located in the National Capital Region in association with this Branch. (There are also three smaller regional laboratories and one at Louisburg). Functional supervision of interpretation activities as carried out in the regions is exercised here. Some 196 person-years are occupied in carrying out the various activities noted above, along with program management.

A further 843 person-years are used in the regions in support of this program, 47 of them at the National Battlefields Park in Quebec. About 20 per cent of the person-years attributed to this program in the regions are located in Regional offices, and the rest at field sites. Because of seasonal employment, many more than 600 persons are employed at field sites over the course of a year.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | 30,475 | 31,922 | 31,922 | 31,922 |
| O&M | 10,880 | 10,469 | 10,466 | 10,466 |
| Grants | 132 | 159 | 159 | 197 |
| Capital | 24,124 | 11,123* | 15,629 | 15,664 |
| **TOTAL COSTS** | 65,611 | 53,673 | 58,176 | 58,249 |
| Revenue | 818 | 1,162** | 1,162 | 1,162 |
| Person-years | 1,086 | 992 | 1,020 | 1,058 |

* The decrease in capital resulted from the government's November 1984 economic statement to remove funding for all new initiatives.

** Increased revenues result from the November, 1984, decision to charge at some places for which entry had previously been free, and to increase fees at others.

## BENEFICIARIES

The preservation and commemoration of specific locations directly associated with persons, places or events of national historical significance benefits all present and future Canadians. The portion of the program which presents to Canadians the significance of the aspect(s) of history being commemorated is a present benefit to Canadians. This presence of the site and any programs associated with it benefits the local community through the tourism it generates, and particularly that part of the private sector which serves the travelling public. In Atlantic Canada, this program is an essential part of the infrastructure for tourism, and is an important contributor elsewhere. At a number of historic parks and sites, there is an element of direct employment of area residents, at least on a seasonal basis. Some historic parks and sites are in or near urban areas, and thus serve as urban or regional parks.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

In 1983/84 two extensive reviews of the program were undertaken - the comprehensive audit and the A-base review. The review noted that, while all activities are directly related to mandate, there were some structural and organizational problems which will be discussed later. Most of the recommendations dealing with the internal activities of this Branch have been followed; those recommendations crossing the boundaries of other headquarters elements are still outstanding. There was no criticism of the program in the Auditor General's March 1984 report to Parliament.

## ASSESSMENT

The objectives as stated are valid; based on many surveys, in the view of many Canadians, the preservation of natural and cultural heritage should continue even in hard economic times (a 1981 survey indicated that 48 per cent of Canadians would support a $10 tax increase to preserve architectural sites of historic interest). As a secondary objective, Parks Canada should ensure that in future planning activities, the tourism potential is maximized insofar as the primary objectives of preservation and commemoration are not impaired.

The program's approach is valid. The Minister has an independent advisory board which gives professional credibility to decisions. The level of federal involvement can range all the way from outright purchase and operation, through joint ventures for exterior renovation, down to the erection of a monument or the mounting of a plaque. This flexibility recognizes different levels of significance and permits coping with economic and other factors.

A major achievement of this program has been to make available to Canadians a number of world-class historic sites such as the Halifax Citadel, Lower Fort Garry and Louisburg.

Among the most knowledgeable stakeholders there is some criticism of the program. This criticism, with one major exception, is that Parks Canada is not doing enough.

a. Those interested in the restoration and preservation of buildings feel that Parks Canada is not active enough; rather it tends to react. This has lead to situations such as the recent public furor over the rebuilding of the Canadian Mint. In this case, as in many of the others, there is a jurisdictional problem. Resource availability is often an issue as well.

b. The exception noted above is that Parks Canada is wasting scarce resources on the restoration of artifacts. The comment is based on the fact that there is a shortage of skills and other resources for such restoration. There are two world-class laboratories in Canada doing this work, one of them operated by Parks Canada. In the view of the National Museums Corporation and some others, Parks Canada is restoring artifacts of a type that are already well-represented in museums and displays, while other elements of Canadian heritage are deteriorating because there are no resources available for restoring them. The study team does not have the expertise to take a position on this issue, but feels that it should be studied.

A question which appears across all of the major Parks Canada programs is the amount of "functional" supervision exerted over the field sites by headquarters and regional offices. Recognizing that at one time the Auditor General noted that there was not enough functional supervision, the study team suspects that there is now an excess of it. This has been raised in the overview since it applies equally to other programs.

One symptom of this problem is that field managers seem to be kept on a "very short leash" when it comes to innovating (generating and applying innovative solutions to unexpected problems, such as the need to increase revenues). Decisions on proposals originating in the field not only take far too long, but inhibit innovation. The study team has no doubt that some of this is an artifact of the whole federal bureaucratic system which preaches accountability but refuses to delegate managers enough authority. This problem has also been covered in the overview.

The study team finds that the observation often made about Parks Canada of a narrowness in interpreting its mandate does apply to the Historic Parks and Sites program. Many Parks Canada staff do state that all restoration at historic parks and sites must have as high an authenticity as possible; reproduction must be as authentic as historical research can support. There is little doubt that a high degree of authenticity can be achieved, but it is also very expensive. The study team feels that this is another question which should be addressed by an appropriate independent group which would then make a recommendation to the Minister. Such a recommendation could well involve the creation of one new class of site, so that the array would then be:

a. Historic places of such significance that they should be purchased and operated by the federal government. All restoration should be to a high level of authenticity, and the interpretation programs developed with special care.

b. Historic places of such significance that they should be purchased and operated by the federal government, but the commitment to authenticity is relaxed.

c. Historic places which do not warrant procurement, but are significant enough that the federal government should be a partner in restoration. The level of authenticity in the restoration is a matter which should be decided through negotiation with the other potential partners when the agreement is being developed.

d. Sites which warrant a monument or plaque to commemorate a person, event or place.

There is no overlap between this program and others in the provincial or municipal spheres; there is a willingness to accept "national" significance as a criterion, with regional and local significance being recognized by other jurisdictions. Mechanisms for joint ventures with these other jurisdictions exist.

It is recognized in a number of quarters, including Parks Canada management, that there has been insufficient attention paid to date to the history of Canada's native peoples. The study team feels that this is a matter which must receive immediate attention, and has proposed that a representative of Canada's native people be added to the Historic Sites and Monuments Board; further corrective action will be suggested with respect to this program.

There is a system plan for Historic Parks and Sites which identifies the various themes and sub-themes which should be represented in the system in some way. There was little criticism of the plan itself, but some critics complained of an apparent over-emphasis on military topics in the present parks system. Parks Canada managers accept this and take it into account when drafting recommendations to the Minister about any proposal from the Historic Sites and Monuments Board.

The A-base Review recommended study of the possible creation at headquarters of a National Technical Resource Centre, built on the expertise now available there and in regions. The centre would focus resources of engineering, archaeological, architectural, cartographic and other essential central technical expertise which supports many of the developmental activities across Parks Canada. Since that time, the question has apparently been studied in detail without reaching a conclusion. This should be corrected since there is a significant potential for delivering more badly needed services with no increase in resources.

The expertise resident within Parks Canada on restoration and preservation is recognized to be of world class. There have been a number of manuals and standards developed internally over the years; these are potentially a major contribution to the world (let alone the Canadian) restoration and preservation community. The study team feels that Parks Canada should assign a very high priority to having these reproduced and made available to the community-at-large.

## OPTIONS

In view of the foregoing analysis, the study team recommends to the Task Force that the government consider the following measures:

a. A study be undertaken by an independent professional of accepted stature to determine whether or not, when viewed from a total Canadian perspective, the artifact restoration work undertaken at the NCR laboratory of Parks Canada is appropriate; reporting should be scheduled as soon as possible. The study team cannot identify how long such a study should take.

b. Commission a study of whether or not the search for total authenticity is appropriate for all restoration at historic parks and sites owned by the federal government. Again, while this question is broader than the last one (economic issues, international standards, and federal/provincial relations are involved), it should be carried out expeditiously by persons with accepted credentials.

c. The question of a National Technical Resource Centre be looked at again with an established deadline for producing a recommendation. This study could be one of several associated with questions raised in the preceding assessment about the level and quantity of functional supervision, and the appropriateness of the present Parks Canada organization for meeting the service mandate.

d. The system plan for Historic Parks and Sites be reviewed for the presence of themes related to the history of Canada's native peoples. This review should be in consultation with representatives of all recognized segments of that portion of the Canadian population. A high priority should be given to future initiatives associated with related themes.

e. It be made clear to all Parks Canada staff that the planning of development at designated historic parks and sites should be carried out in full consultation with provincial and local officials, as well as representatives of the private sector, to ensure that the maximum opportunities for tourism are realized.

f. The situation which allowed the demolition of portions of the Canadian Mint to take place without the prescribed review be corrected. This involves reviewing the prescribed procedures for approval of changes to federal heritage buildings, and if deemed to be appropriate, confirming them. Those responsible for issuing construction orders should then be informed of the penalties for ignoring these procedures, and the government's commitment to applying them.

# HERITAGE CANALS

## OBJECTIVE

To encourage public undertanding and enjoyment of Canada's natural and cultural heritage by protecting for all time the heritage resources of certain federally maintained canals and by operating these canals predominantly for recreational use.

## AUTHORITY

| | |
|---|---|
| Key: | Department of Transport Act, Heritage Canals Regulations (1984)<br>Orders-in-Council (1972, 1976, 1978, 1979) |

## DESCRIPTION

Between 1972 and 1979, the responsibility for certain canals was transferred from the Department of Transport to Parks Canada. The transfer was made on the understanding that future management of these canals would emphasize not only transportation but the protection, enjoyment and interpretation of their natural and cultural heritage values. One canal (Old Beauharnois) was subsequently transferred from Parks Canada to the Province of Quebec for road purposes. Heritage canals now fall under the Historic Parks and Sites Branch of Parks Canada.

The following nine heritage canals are now operated and maintained by Parks Canada (listed from West to East):

| Canal | Province | Length (km) | No. of Locks |
|---|---|---|---|
| Sault Ste. Marie | Ontario | 1.9 | 1 |
| Trent-Severn | Ontario | 386<br>(65 canalized) | 43<br>(plus marine railway) |
| Rideau | Ontario | 201<br>(19 canalized) | 47 |
| Carillon | Quebec | 0.8 | 1 |
| St. Anne | Quebec | 0.6 | 1 |
| Lachine | Quebec | 13.7 | -- |
| St. Ours | Quebec | 0.2 | 1 |
| Chambly | Quebec | 19.0 | 9 |
| St. Peters | Nova Scotia | 0.8 | 1<br>(tidal) |

All of the canals have been designated by a plaque as being of national historic significance. All except the Lachine Canal are operating canals. Several of the canals combine to form recreational systems. The combination of the Rideau, Carillon and St. Anne permits a "triangular" round trip connecting Montreal, Ottawa and Kingston; the Trent-Severn system provides access from Lake Ontario to Lake Huron (Georgian Bay); and the St. Ours/Chambly combination (both on the Richelieu) link to Lake Champlain and via the intercoastal waterway to Florida. The canals generally operate during an approximately 3½ month season from late May to early September.

While the locks are predominantly used by recreational boaters, commercial traffic amounts to between 5 and 15 per cent of passages (highest at the St. Peters Canal, which is used by fishermen). Tour boat operators are increasingly organizing trips through the canals (e.g., seven tour boat operators at Sault Ste. Marie). In 1984, almost 370,000 boats passed through the locks of the heritage canals and this alone accounted for 1.3 million visitor-days. There are no adequate statistics on the land-based use of canals. However, winter use on the Rideau Canal has been estimated to represent 700,000 visitor-days. There is little question that total use of canals, including both land- and water-based activities, but excluding their role as urban parks, exceeds 3 million visitor-days per year.

The development and management of each heritage canal and its associated lands are based on a plan which provides for present and future use and ensures that the character of each canal is protected. These plans are developed with an extensive public consultation program and reflect the fact that lands bordering canal waterways may be owned by provincial or municipal governments or by private owners. The planning for those areas which are exclusively federal responsibility must be closely co-ordinated with the planning of adjacent lands. In particular, the canal systems (Trent-Severn, Rideau and St. Ours/Chambly) play a major role in controlling water levels of lakes and rivers in surrounding regions; in effect, the canals have become part of the local ecology. Also, in the case of the Rideau, the federal government claims ownership of the bed of the lakes and rivers making up the non-canalized portions of the system, and in those cases adjacent land owners must obtain permission for any structures (e.g., docks) or actions (e.g., dredging) that affect that bed.

Boats using the canal are subject to extensive regulation for safety, environmental protection, historic preservation, and efficient canal operation, among other things. Lockage fees are charged at all canals except Sault Ste. Marie and St. Peters, which have traditionally been free. These fees have recently been increased as follows*:

> For the smallest size class: from $3.00 to $5.00 for a single passage and from $30.00 to $75.00 for a season pass.
>
> For the largest size class and commercial boats: from $4.00 to $15.00 for a single passage and from $80.00 to $225.00 for a season pass.

* The classification of boats for purpose of assessing fees changed this year, so the comparisons are not precise.

**PROJECTED EXPENDITURES (000s of dollars)**

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries | 20,681 | 20,447 | 20,447 | 20,447 |
| O&M | 4,260 | 4,204 | 4,204 | 4,204 |
| Grants | -- | -- | -- | -- |
| Capital | 19,162 | 18,700 | 18,395 | 17,937 |
| **TOTAL COSTS** | 44,103 | 43,351 | 43,046 | 42,588 |
| Revenue | 945 | 2,168 | 2,168 | 2,168 |
| Person-years | 699 | 694 | 691 | 692 |

Annex 1 breaks these figures down by canal.

**Notes** 1. These figures include headquarters and regional office support and overhead.

2. The increase in revenues in 1985/86 reflects fee increases.

**BENEFICIARIES**

The heritage canals system provides unique opportunities for viewing canals as they were designed and operated from the 1830s on. Because they were built at different times, and have been subject to different degrees of modernization, collectively they permit study of engineering and industrial history in a way that books and records cannot.

The heritage canals offer scenic water routes for the recreational use of boaters and for some commercial users. A substantial proportion of the former are American. Comparable opportunities are available for the land-based visitors along the length of the canal, at picnic sites and bicycle trails and through interpretation programs.

Economic benefits are realized by the boat building industry, the cottage industry, hotel and marina operators and local merchants in the communities along the canals. However, these impacts are difficult to distinguish from those of other forms of tourism and have never been carefully estimated. Direct benefits are also received by those fishermen, construction firms and tour boat operators who use the canals.

Parks Canada is a significant employer along the canals. The unique requirements for maintenance of canal walls and gates provide benefits to a special segment of the construction industry.

Finally, an undetermined but very significant benefit is received by anyone with land or facilities along a waterway, the level of which is maintained by the canal. They also benefit from flood control, which is provided in the spring by using the canals as overflow channels. (Conversely, those people who have built cottages on lakes used as water supply sources for the canal may be adversely affected if water levels are adjusted too rapidly.) Property owners in urban areas receive benefits in increased property values from proximity to the canal.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

The Parks Canada A-Base Review done in 1983 made two significant recommendations with respect to heritage canals. The first proposed separating the resources devoted to canals from those devoted to co-operative heritage areas in order to better focus effort. This recommendation has been accomplished. The second admitted a lack of consensus within Parks Canada on the degree of control that heritage canals require from headquarters, and recommended that a review of this issue be carried out. So far, this recommendation has not been carried out. The Auditor

General's report to Parliament in 1984 made no reference to heritage canals.

## OBSERVATIONS

Heritage canals provide for three distinct kinds of use: as navigational routes for power boats; as destinations for day visits by tourists and local people; and as urban parks. Only the first type of user can be readily identified and analyzed. In particular, while the owners of power boats appear to represent a higher income segment of the Canadian public, this is not true of other users. However, it is also this water-based use that is most readily subject to imposition of fees.

The capital costs for maintaining an operating canal system are high. For example, in the five-year plan for the Ontario region of Parks Canada, the Rideau Canal accounts for 45 per cent and the Trent-Severn Canal for another 25 per cent of total projected capital expenditures. There are at least three reasons for these high costs:

a. First an interim problem stems from the poor state of repair of the canals at the time of transfer to Parks Canada. Recognizing their declining value for transportation, the Department of Transport had for some time ceased to invest in the canals, and Parks Canada has had to incur very high costs to restore them to a safe and secure state. Current capital expenditures on the Rideau system run from $6 to $8 million per year; once repairs are completed (by about 1995) and a "steady state" is reached, it is estimated that those expenditures will drop to around $2 million (1984 dollars) per year.

b. Second, as sites of national historic significance, the canals are not necessarily designed, restored or operated in the least costly manner. Rather, a large degree of history is maintained through manual operation of locks, the use of historic construction materials, and in some cases the use of historic construction methods. These costs reflect the objective of maintaining the cultural heritage of the canals.

c. Third, the major canal systems include an extensive series of waterways for maintaining the flow of water to and through the lake system. As indicated above, this water level is important in the economy of the region and in avoiding flooding. It is estimated that, if canal operations were limited strictly to regulation of water levels, capital costs would still be 50 per cent of those shown in Annex 1 for most of the canals.

The regional economic impact of the canals is high. In some cases, they are the predominant economic asset of the region and the source, in one way or another, of the greater part of the income of the region. The canal systems in central Ontario and Quebec are responsible for substantial tourism from the United States; according to some views, these canals are the second most important international tourist attraction managed by Parks Canada (after the mountain parks). The Government of Ontario has estimated that the canals generate over $1.2 billion annually in direct tourist expenditures. Cost-benefit studies are rough but suggest that the gross return to the regions in which the canals are located substantially exceeds the costs to the government.

As the only non-operating heritage canal, the Lachine represents a special case. It is at least as historic as the other canals, and in addition, being located in a city that was central to Canadian development, it provides a unique opportunity to investigate industrial archaeology and to offer interpretation of Canada's industrial heritage. (Parks Canada has been criticized in its historical work for focusing too heavily on the military and fur trade aspects.) The costs of maintaining the Lachine Canal are low compared with other canals: 7 person-years (averaged over the year), $200,000 in O&M and under $1 million in capital (exclusive of work on restoration of a Hudson's Bay warehouse.) There has been some pressure from groups in Montreal to re-open the canal as part of Le Vieux Port development; costs of doing so will probably exceed $75 million.

Apart from wage levels, the most common complaint from tourist operators about the heritage canals is the short operating season. There is no physical reason why the canals could not be operated earlier in May and kept operating until Thanksgiving.

As indicated above, a significant fee increase was instituted in 1985/86. Increases in fee schedules have lead to strong complaints. However, after an initial drop in use following fee increases, traffic figures return to pre-increase levels. Local users and "Sunday boaters" are reported to be those most sensitive to fee scales. The administration of the fee structure has been covered in the Overview.

## ASSESSMENT

The objective as stated is appropriate and is being achieved.

Parks Canada contracts with the private sector for all of the required recapitalization and some of the regular maintenance on canals. However, the latter could be carried further in view of the fact that canals operate for little more than three months a year.

Interviews indicate that in recent years the planning process related to canals has been working well. The CORTS (Canada Ontario Rideau Trent-Severn) study and agreement is regarded as a model.

While the focus of the canal system remains on the water, land-based use appears to be growing at a more rapid rate than water-based use. (One must use the word "appears" as the statistical base on land-based usage is totally inadequate.) However, land-based users are not well accommodated at most lock sites; inadequate parking and day-use facilities limit use, but should not necessarily be provided by Parks Canada.

## OPTIONS

The foregoing analysis leads the study team to recommend to the Task Force that the government consider the following options:

a. The existing nine heritage canals continue to be owned by Parks Canada. However, possible additions to the system, such as the canal at Lockport in Manitoba, should not be considered unless compelling national reasons can be advanced and unless either a cost-sharing agreement for restoration and annual maintenance can be negotiated or a transfer of capital can be arranged with the agency currently owning the canal.

b. Over the next five years, Parks Canada attempt to bring its revenues up to the point where they cover the O&M costs of the heritage canals sytem. This would be accomplished in four ways:

   - Lockage fees would be instituted at those canals where they are not now in use.

   - Lockage fees would be gradually increased on the basis that most recreational and commercial users prefer small, gradual fee increases over the long term, as opposed to a sudden large increase to "catch up" with inflation. If some method can be found to exempt permanent (i.e., not summer-only) residents of the region from those fees, such an approach should be considered as a matter of public relations.

   - Fees should be instituted that are commensurate with the costs imposed by certain facilities, such as overnight mooring, and for certain services, such as approvals for shoreline changes.

   - Negotiations should be opened with the provinces of Ontario, Quebec and Nova Scotia and, assuming the permission of Ontario and Quebec, with several of the largest cities on the canals concerning contributions to the annual O&M costs in recognition of the high local and regional benefits of canal operations. This would require transfers from the provinces and municipalities of approximately $12 million per year*. The great bulk of the costs are incurred in Ontario, which suggests that Ontario should make the largest transfer. In addition, a specific request should be made that the city of Montreal provide financial support for the Lachine Canal in view of its unique position as a non-operating canal, the immediate benefits of which accrue largely to the residents of that city. In such negotiations, the federal government might suggest to the provinces and cities that their property assessment base is augmented by the higher values of properties adjacent to the canals.

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* Total operating costs amount to $15 million (Annex 1). Revenues are expected to be $2 million this year. Assuming that the proposals outlined above result in collection of another $1 million, some $12 million remains to be collected.

c. Although several of the canals pass through cities, and provide Parks Canada with an "urban presence", the notion of urban parks should generally be resisted by Parks Canada as outside (and perhaps contradictory to) its mandate. Again, the Lachine Canal should be treated as an exception.

d. In view of its non-operating status, and as a way to indicate that restoration to operating status is not under consideration, the designation of the Lachine Canal be changed from a heritage canal to a historic park, and the feasibility of transferring responsibility for it to the Province of Quebec or the City of Montreal be investigated.

e. Because it is not required for safe passage or for maintenance of water levels, the Sault Ste. Marie Canal be converted by Parks Canada to non-operating status, provided that there are no serious adverse implications of such action. Potential annual savings are over $2 million, though some added costs may be incurred at the parallel St. Lawrence Seaway Canal.

f. Parks Canada develop a plan in consultation with bargaining units for more extensive contracting of its maintenance requirements and determine how this would affect its costs and personnel requirements.

g. Parks Canada develop a co-operative plan with provinces and with local communities so as to better serve the land-based canal user. This plan would begin with a joint statistical survey (using imaginative sampling techniques to keep costs down) and would include provisions for campgrounds, picnic facilities, bicycle paths, and compatible business operations in areas adjacent to the canal. While none of these services should be operated by federal agencies, Parks Canada should seek ways to raise revenue from land-based users at selected sites, e.g., the Peterborough Lift Lock.

h. Parks Canada develop, within one year, a cost-benefit analysis of extending the operating season for canals, or at least of keeping them full for a longer period.

i. Parks Canada investigate the possibility of operating some canals under lease, and if study results are positive, move to experimental leasing.

**Note** Additional observations and proposals relative to canal operations, such as wage rates, summer employment programs, and the roles of central agencies, apply equally to other portions of the Parks Canada program and have been treated in the Overview.

# ANNEX 1

## Details Of Canal Finances (1984-85)

| Canal | PYs* | Capital Funds ($000) | Operating Funds ($000)** | Revenues ($000) |
|---|---|---|---|---|
| Sault Ste. Marie | 39 | 1,638 | 1,194 | 13 |
| Trent-Severn | 233 | 4,862 | 7.275 | 451 |
| Rideau | 164 | 5,834 | 4,885 | 133 |
| Carillon | 8 | 43 | 265 | 4 |
| Ste-Anne | 4 | 10 | 126 | 3 |
| Lachine | 9 | 3,583*** | 406 | 303 |
| St-Ours | 5 | -- | 236 | 11 |
| Chambly | 45 | 1,103 | 1,226 | 23 |
| St. Peters | 4 | 2,089 | 105 | 4 |
| **TOTAL** | 511 | 19,162 | 15,718** | 945 |

* Includes only those individuals and expenditures at canals and excludes regional and headquarters support and overhead.

** Includes leases on adjacent land.

*** Includes costs for restoration of a Hudson Bay warehouse.

## HISTORIC SITES AND MONUMENTS BOARD

### OBJECTIVES

To provide independent and professional input to the Minister's decision-making process on the designation and commemoration of sites of national historic significance.

### AUTHORITY

Key: The Historic Sites and Monuments Act (1952-53) C. 39, s.1 (amended 77.06.16).
The Government Organization Act (1979)
Parks Canada Policy, Part II, 1.0-2.3.2

### DESCRIPTION

The Act, as amended, authorizes the appointment by Governor-in-Council of seventeen Board members. It authorizes the payment of a small honorarium, actual travel expenses when on Board business, and a small sum to cover clerical and stenographic services. The Board historically has been made up either of professional historians or widely respected amateur historians. They represent all regions of Canada and interested federal departments.

Once a submission nominating a site is received, the historians at Parks Canada undertake background research on the topic. The Board and its six sub-committees then serve as an independent peer review of this research. (Once validated by the Board, the research results become the basis for developing the theme(s) for the activities associated with the site, the text of plaques, the kinds of interpretation that will be undertaken, etc.) The recommendations of the Board are sent to the Minister along with the comments of Parks Canada on matters such as resource availability and compatibility of the proposal with the system plan (which ranks the relative priority of various themes of Canadian history in the light of projects underway or previously completed).

In 1983, the Board received 84 submissions; while the acceptance rate varies from year to year, in 1983, only 43 per cent of the submissions resulted in a recommendation for some action by Parks Canada. Historically, the Minister accepts more than 98 per cent of such recommendations, with the lack of resources being the principal reason for any rejection.

If the Minister approves the recommendation, then Parks Canada takes appropriate action, which may range from the mounting of a plaque (average cost about $750.00 for a bilingual one to over $1,000.00 for a trilingual one), to the creation of a national historic park. A statement of themes and objectives is prepared at Headquarters, and the relevant Region develops management guidelines, identifies options for development, carries out public consultation, and then prepares a management plan.

Designation by the Board, and subsequent approval by the Minister, conveys no special status to the site except for the moral pressure that a concerned public can exert; an example of historic architecture, which is privately owned, can be demolished at any time. The owner of an historic building may be able to obtain financial assistance for repair or restoration, but there is no guarantee of this. By the same token, the owners are totally free to do what they wish with an historic building.

**PROJECTED EXPENDITURES (000s of dollars)**

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries | -- | -- | -- | -- |
| O&M | 80 | 80 | 80 | 80 |
| Grants & Contributions | -- | -- | -- | -- |
| Capital | 68 | 68 | 68 | 68 |
| **TOTAL COSTS** | 148 | 148 | 148 | 148 |
| Revenue | -- | -- | -- | -- |
| Person-Years | -- | -- | -- | -- |

(Internal staff support equivalent to one person-year is provided from Parks Canada Headquarters.)

**BENEFICIARIES**

The Minister receives objective, informed advice from well-qualified Canadians outside Parks Canada on decisions which must be made under the Act. Those interested in the identification and/or preservation of historic sites receive the benefit of an informed review by persons other than those responsible for the implementation. Some increase in tourism may result from a designation, with benefit to that portion of the private sector serving the travelling public. The owner of a designated structure/site may receive some personal satisfaction from it, and possibly some assistance from others in preserving at least the exterior.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

There was no mention of this program in the Auditor General's report on the 1983/84 comprehensive audit of DOE. In the A-Base Review, it is mentioned frequently in the discussion of the National Historic Parks and Sites Branch, but without comment.

## ASSESSMENT

There is a clear need for some arrangment such as this for independent and professional advice on whether or not a site, person or event has national historic significance. The Board has been criticized as being too academically oriented, but the study team views this as inherent in its independence and professionalism; the non-academic factors (political considerations, resource questions, etc.) are contributed to the Minister's decision-making process by others. There was also a suggestion that the Board sometimes is influenced by resource questions, but since the recommendations of the Board are confidential, and since the only public announcements come from the Minister (after the other factors have been included) the study team feels that this comment is not supported.

There is no overlap with other federal programs, including those of the National Museums Corporation. Because the emphasis is on national historic significance, no provincial or municipal program is relevant. The non-public sector is involved to the extent that those serving on the Board receive only nominal compensation beyond out-of-pocket expenses; the honoraria are a fraction of what such experts could receive as consultant fees. Other approaches to obtaining this type of advice, such as from Heritage Canada, would cost the taxpayer about the same amount as does the Board, and would not affect the program outputs.

The study team has ascertained that over the last 10-15 years, Ministers have accepted the advice of the Board on the national historic significance of an event, person or place. (Subsequent action by Parks Canada has reflected the relative priority of the event, person or place in terms of the system plan, and resource availability; this does not affect the validity of the work of the Board.) The study team did not detect any unintended effects of this program.

The approach for nominating persons to the Board ensures that all regions of Canada are represented, but the study team notes that native people are not necessarily represented. This has led some to observe that the history of such people is not given adequate consideration by Parks Canada. The study team considers this observation to be valid.

## OPTIONS

The option of taking decisions based solely on the advice of officials is not considered desirable. There is no advantage to the taxpayer in obtaining this advice through some other mechanism.

Therefore, the study team recommends to the Task Force that the government consider:

a. maintaining the individual identification of the program to ensure that the Board continues to be seen (and to operate) as an independent agent; and

b. that the Minister ensure an appropriately qualified person of native ancestry be on the Board.

## CO-OPERATING ASSOCIATIONS

### OBJECTIVES

To enhance the quality of visits to National Parks, National Historic Parks and Sites through the involvement of the voluntary sector.

### AUTHORITY

Key: Parks Canada Policy, Parts I & II, National Parks, section 2.2, paragraphs 4.2.5 and 4.2.6 (p. 33)

### DESCRIPTION

This is one of three related programs:

a. Co-operating Associations are private, non-profit organizations which carry out activities of an educational or interpretive nature beyond those for which Parks Canada is allocated resources. An example of such activities is the preparation, printing and sale of booklets and pamphlets on topics related to the park. In all such cases, there is an agreement between DOE and the particular association.

b. The National Volunteer Program whereby individuals and groups volunteer to work directly for Parks Canada on tasks similar to those done by Parks staff, in return for out-of-pocket expenses.

c. Other co-operative agreements with organizations (not necessarily nonprofit) outside Parks Canada for tasks such as:

   - operation of a centre for liaison and co-ordination on Parks policy and planning (University of Waterloo);
   - holding of land in trust for future parks (Nature Conservancy of Canada); and
   - cost sharing the restoration of the exterior of historic buildings with the provinces and others.

This program deals only with Co-operating Associations as described above. The cost-sharing of restoration of the interior of historic buildings is described elsewhere.

Over the past five years, the number of associations with agreements has risen from five to twenty-five (representing about 3,000 volunteers). Twenty-one will receive financial support in 1985/86 as a "contribution" (the activities expected of the association are clearly identified in the annual contribution funding agreement). Over the five years, the amount available for such agreements was eroded through inflation, since the allocation has been maintained at $250,000 (budget-year dollars).

The total program proposed by each association must generate revenue. Any profit made must be reinvested in related Parks activities to further enhance the service at the park or site. Examples of such activities are special events for seniors or for children.

The agreements normally span five years, but the amount of the contribution must be approved annually, reflecting the overall availability of money and the increased demand. In the annual allocation exercise, the following are considered:

a. Priority is given to funding existing programs carried out by existing associations under existing agreements. Second priority is given to new proposals from new associations. If resources are still available, the expansion of existing programs to additional Parks Canada Sites, and expansion to additional sales outlets at the same site by existing associations are considered in that order.

b. A proposal cannot exceed $80,000 for a single site, and an additional $50,000 for each additional site, over the five-year period. In any one year, the request should not exceed $40,000. An association is allowed to spend up to 25 per cent of the contribution for administrative overhead (salaries, advertising, equipment, accounting services, etc.).

c. Theme-related interpretive products or visitor services are given a high priority, and souvenirs a low one. All should be of Canadian manufacture.

d. A proposal which identifies other outside funding sources (for example, co-publication of pamphlets, etc.) is given a higher priority than one which does not.

The kinds of activities that can be undertaken, and the types of goods that can be sold in gift shops in parks or at sites are carefully controlled. They must be of a type and quality that complement and enhance the presentation of the particular heritage for which the park or site was established. This, in effect, reduces the revenue-generating potential of such activities, and thus any competition with the private sector.

**PROJECTED EXPENDITURES (000s of dollars)**

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries | -- | -- | -- | -- |
| O&M | -- | -- | -- | -- |
| Grants | 250 | 250 | 250 | 250 |
| Capital | -- | -- | -- | -- |
| **TOTAL COSTS** | 250 | 250 | 250 | 250 |
| Revenue | -- | -- | -- | -- |
| Person-years | (Staff support to a level of 1½ PY is provided to this program by staff at Parks Canada Headquarters) | | | |

**BENEFICIARIES**

The Minister of the Environment is able to offer parks visitors a higher quality experience through the contributions of associations of volunteers.

Volunteers and the communities from which they come gain a sense of achievement through their contributions to the enjoyment of others.

The taxpayer benefits from a higher level of service than would otherwise be the case given the level of expenditure at the park or site, and any increase in tourism which results benefits that portion of the private sector which serves the travelling public.

## POLICY REVIEWS, EVALUATION, AUDITS DONE ON PROGRAM

A draft discussion paper from the Office of the Auditor General recommended a review of the effectiveness of this program. In 1983, such a review was carried out by James Murfin, Co-operating Association Co-ordinator for the United States National Park System; he described the program as delivering good value for money invested.

## ASSESSMENT

This program is meeting its objectives. These objectives are related to the extension of activities covered by the various enabling Acts, but to which resources are not allocated in the Parks Canada program. Through involvement of the voluntary sector, the dollars contributed from the tax base exert considerable leverage, creating benefits far beyond what those dollars alone could purchase.

The benefit to parks visitors is much higher than the nominal cost of the program.

The awakening interest of Canadians in their natural and cultural heritage is reflected in the increased numbers of proposals for participation in this program.

The program is suffering greatly through the erosion by inflation of the resources dedicated to it. This year, a number of contributions are only nominal, (an attempt to demonstrate good faith). No new proposals will be entertained next year, in spite of the fact that a number of excellent ones are available.

Activities carried out under this program do not compete with the private sector.

## OPTIONS

The study team recommends to the Task Force that:

a. The program continue using the criteria for selection outlined above.

b. The allocation to the program be increased by $50,000 in 1986-87 to offset at least a portion of the loss of buying power through inflation since its inception, and the department's operational plan reflect to the extent possible the maintenance of this buying power over the next few years.

# AGREEMENTS WITH PROVINCES AND MUNICIPALITIES FOR ESTABLISHMENT OF NATIONAL PARKS

## OBJECTIVES

To create a co-operative mechanism for the establishment of new national parks (or to adjust boundaries at existing parks) between the federal government and other levels of government such that the respective goals and objectives of each can be realized or, where necessary, acceptable compromises between them can be defined.

## AUTHORITY

Key: National Parks Act (Section 3.1 (1)) (1935)
Parks Canada Policy (National Parks, section 1.3) (1979)

## DESCRIPTION

This profile describes the process generally used to establish new national parks and should be studied in conjunction with the profile on National Parks. With an agreement, a new park (south of 60°) can be established by proclamation. In the absence of an agreement, the federal government must on its own, obtain clear title to all land required for the park and establish it by special act of Parliament. The latter option is not possible when the province owns the lands or interest therein, and is not favoured, but it is used in special circumstances. (Mingan Islands Parks in Quebec was created in this manner in 1984.) Legally, an agreement is not required north of 60°, but it has become normal practice to prepare one with territorial governments (and with the concurrence of the Minister of Indian Affairs and Northern Development).

Public interest and support, as well as the co-operation of provincial and territorial governments (and where appropriate, municipal and village councils), are essential for the establishment of new national parks or the adjustment of existing park boundaries. Within the provinces, a federal-provincial agreement sets out the terms and conditions of transfer of administration and control of required lands from the province to the federal government. The process of negotiation may take several years and includes feasibility studies, public consultation, and provision for mineral surveys of lands within the proposed park boundaries. Typical provisions in a final agreement would include:

agreement on terms of establishment, park boundaries, and methods for and timing of land assembly;

resolution of land-use conflicts, including agreement on traditional land uses which may be permitted to continue and other special measures to reduce adverse impacts on local occupants or users;

commitments to maintain unimpaired the quantity and quality of water flowing into or from the park;

commitments for co-operative planning within the park and in the private or provincial lands surrounding the park to ensure compatible development;

commitments for construction of infrastructure or tourist facilities associated with the park; and

cost sharing formulae associated with all of the above.

Depending upon the stage of negotiations and the importance of the issues, negotiations leading toward an agreement may be conducted at the director or assistant deputy minister level or occasionally at the ministerial level.

There is a great variation among existing agreements with respect to cost sharing. While provinces would normally turn over any provincial crown lands without charge to the federal government, cost sharing for the purchase of third-party interests may range from 50-50 to 100-0, depending upon how badly each party wants the park, political factors, etc. Similarly, the range of "extras" included in an agreement (roads, swimming pools, tourist attractions) also varies widely, and for exactly the same reasons.

The federal/provincial agreement to create a new national park is one of the most significant steps in the process of national park establishment. As a joint agreement it commits two levels of government to a common objective: to protect the park area and encourage public understanding and enjoyment of the area both at the time the park is established and in the future. When national parks are created in conjunction with native land claims, a special agreement may be necessary between Parks Canada and representatives of local native people to set up a mutually agreeable joint management regime for the park. (An outstanding land claim precludes the establishment of a park; in this case a "park reserve" may be created until such time as a settlement is reached.) The shift toward use of agreements for establishing new national parks can be seen in the dates on which parks were proclaimed. Ignoring eleven agreements involving the four western provinces that were signed in 1929 as part of the Transfer of Natural Resources Agreement, almost all other agreements date from the late 1960s forward. Recent ones include Grasslands, Gros Morne and Pacific Rim, all of which are still in the process of land acquisition.

**PROJECTED EXPENDITURES** (000s of dollars)

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | -- | -- | -- | -- |
| O&M | -- | -- | -- | -- |
| Grants | -- | 2,060* | -- | -- |
| Capital | -- | 200** | -- | -- |
| **TOTAL COSTS** | -- | 2,260 | -- | -- |
| Revenue | -- | -- | -- | -- |
| Person-years | -- | -- | -- | -- |

* Contribution to Province of Saskatchewan for oil and gas exploration in lands proposed for Grasslands National Park.

** Acquisition of lands for Gros Morne National Park.

**Notes** 1. The preparation of agreements for the establishment of new parks is so integrated with other National Parks activities that it is not possible to identify the person-years. The time actually required to draft an agreement is small, but that involved with working out the terms and conditions is much larger.

2. In addition to the expenditures shown above, funds will likely be required (under existing agreements) in future years for land acquisition for Grasslands and Pacific Rim National Parks, but amounts and timing are unknown at this time.

## BENEFICIARIES

The ultimate beneficiaries of this program are the same as those of National Parks inasmuch as the purpose of the program is to create or expand national parks.

Assuming successful progress in negotiation, a separate kind of benefit is represented by improved federal-provincial or federal-territorial relationships. Similarly, the interests of local people, who are directly affected by the establishment or extension of a park, are likely better protected by this approach than they could be in the absence of the search for agreement.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

In 1983/84 two extensive reviews of the program were undertaken - the comprehensive audit and the A-base review. These reviews have resulted in a number of improvements to management systems but did not suggest any major changes in the process of creating agreements of the type covered by this program.

## OBSERVATIONS

Increasingly, and not surprisingly, federal/provincial agreements for the establishment of national parks are becoming specialized instruments tailored to the needs and hopes of individual regions. In many ways, they are starting to resemble economic development agreements, with the park seen at least as part of a "tourist package" and in some cases as part of a broad regional development strategy. (Concern about the extent to which these elements of agreement have inappropriately increased costs of park establishment was expressed by the Real Property Management Team. Typically, the province insists on some of these capital projects as part of the "deal" for establishment of the park. Similarly, where native groups are involved, the agreements are seen broadly as part of their management and development objectives.

As a result of a Ministerial decision, the federal government absorbed 100 per cent of the costs for purchase of third-party interests and for oil and gas surveys at Grasslands Park. These shares contrast with the terms adopted in earlier park agreements, but it is not clear whether they represent a precedent that will be followed in future agreements.

Although Northern Yukon had long been identified as a potential park site, the park itself was recently established as part of the COPE land claims settlement. Again, it is too soon to determine whether this represents a precedent for the creation of other national parks in the North.

## ASSESSMENT

The objective of this program is valid and is being achieved.

Parks Canada can fulfill its mandate more easily, less expensively, and with greater political support by working with the provinces and territories.

The agreements covered by this program represent a recognition that national parks can no longer be seen as islands. Both the protection and the enjoyment portions of the Parks Canada mandate require the co-operation of other levels of government, of local people and native organizations, and of non-government organizations.

All indications are that, while the process of reaching agreement is long, complex and by no means always smooth, the objectives of this program are valid and are generally being achieved.

## OPTIONS

The study team recommends to the Task Force that the government consider maintaining this program without change.

Even in the event that no immediate expansion of the national park system will be undertaken, the process of negotiating agreements with other levels of government and with native organizations should continue.

The limits of federal cost-sharing in land acquisition be more clearly established. In recognition of provincial benefits that will accrue from the park, the federal share for purchase of third-party interests and for mineral surveys be limited to a maximum of 80 per cent. This maximum should not apply in parks north of 60°.

Whenever parallel negotiations are underway for the establishment of a national park and for broader regional development, or where the respective planning boundaries overlap, direct consultation be sought between those involved in each set of negotiations or management plans. In cases where the development agreements involve infrastructure in the region immediately adjacent to the park, such consultations should be required.

In negotiating each agreement, those terms and conditions that respond to regional development objectives be distinguished as clearly as possible from those necessary for establishing the park. Any federal costs associated with the former should be allocated to DRIE or to the province rather than to Parks Canada. Where the investments will benefit primarily private enterprise, they should not be paid for by Parks Canada, and where practical, they should be located outside the park.

Notwithstanding the above, the approach of regarding park establishment within a regional development context is appropriate and should be endorsed.

# AGREEMENTS WITH PROVINCES AND MUNICIPALITIES FOR FIRE PROTECTION

## OBJECTIVES

To secure fire protection services from provinces and municipalities for structures and forests in those national parks and national historic parks and sites where assistance is required.

## AUTHORITY

Key: Government Organization Act (1979)

## DESCRIPTION

The Department of the Environment (DOE) enters into agreements with provinces and municipalities for forest or municipal fire protection to national parks and national historic parks and sites where outside assistance is required. The attachment shows locations and expenditures in fiscal year 1984/85. The agreements are delivered through the National Parks program.

The agreements with municipalities apply only in cases where a Parks Canada facility is located outside a municipal boundary. Inside a municipal boundary, Parks Canada facilities receive normal municipal services, including fire protection.

The amount of money shown under this program does not reflect the full extent of expenditures for fire protection. Under the Mutual Aid Resource Sharing Agreement -- to which all provinces and territories plus Parks Canada will be signatories -- mutual assistance in fire identification and suppression are provided on call with an exchange of money, occurring only after a call has been made. (These funds are paid from the Parks Canada Contingency Fund - vote 120). The full budget of $106 thousand for this program applies mainly in one of two cases:

a. where some Parks Canada structure is located outside a municipal boundary but is too small to justify independent fire protection, or where supplementary protection is required; and
b. where Parks Canada forest areas can be surveyed by provincial aircraft with only minor diversion from their normal flight paths.

Agreements on fire detection service are built into some of the agreements to establish a park, as at Pukaskwa, where the province provides all protection and is reimbursed by Parks Canada.

In addition to the agreements to which the expenditures shown below apply, there are other site-specific agreements (as with each of the territories), which allow for the sharing of fire identification and suppression services but which involve no exchange of funds.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | -- | -- | -- | -- |
| O&M | 106 | 106 | 106 | 106 |
| Grants | -- | -- | -- | -- |
| Capital | -- | -- | -- | -- |
| **TOTAL COSTS** | 106 | 106 | 106 | 106 |
| Revenues | -- | -- | -- | -- |
| Person-years | -- | -- | -- | -- |

(Staff support of less than 0.1 person-years is required by staff at Parks Canada Headquarters; this effort is included within EC-38.)

For distribution of expenditures, see attachment; with two exceptions the individual agreements are for very small amounts.

**BENEFICIARIES**

The immediate beneficiaries are the national parks and the national historic parks and sites receiving the fire protection (more specifically the people, resources and structures in those parks). In some cases, nearby areas or provincial lands receive protection as a by-product. The Pukaskwa fire detection agreement was included mainly to protect provincial forests from fires that might originate in the National Park.

**ASSESSMENT**

The objective statement for this program is very broad. Though it does encompass actual objectives, it appears to cover much more. The specific objectives are mainly valid and are being achieved.

This program does not overlap with any other federal program and, in fact, rationalizes the delivery of services in cases where it is more convenient and less expensively delivered by a non-federal government.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The objective statement for this program be revised to reflect its actual goals.

b. The program continue at its current level of expenditure for another year.

c. During that year, those portions of the program that involve fire protection for natural areas of National Parks be assessed for relevance to policy noted above. Clearly, the views of provinces and territories must be considered. In particular, provisions for fire protection in Pukaskwa National Park, which accounts for 43 per cent of total program expenditures, should be reconsidered when the federal/provincial agreement is renegotiated in 1988.

## ATTACHMENT

### Payments to Provinces or Municipalities for Fire Protection of National Parks and National Historic Parks and Sites

| Agency | Federal Expenditures 84/85 ($000) |
|---|---|
| Louisbourg, Nova Scotia (Louisbourg) | 2.0 |
| Baddeck Volunteer Fire Department, Nova Scotia (Alexander Graham Bell) | 0.8 |
| North Rustico, P.E.I. (Prince Edward Island) (Structural only) | 1.3 |
| Rocky Harbour, Newfoundland and Labrador (Gros Morne) (Structural only) | 0.6 |
| Cheticamp Fire Brigade, Nova Scotia (Cape Breton Highlands) (Structural only) | 1.6 |
| Radium Junction, British Columbia (Kootenay) (Structural only) | 8.8 |
| British Columbia (Pacific Rim) | 8.3 |
| Ontario (Pukaskwa) | 50.0 |
| Québec (Sociétés de Conservation de la Gaspésie - Forillon et de Québec - La Mauricie) | 33.5 |
| **TOTAL** | 106 |

## AGREEMENTS WITH PROVINCES, MUNICIPALITIES, OR PRIVATE NON-PROFIT ORGANIZATIONS FOR HISTORIC SITES

### OBJECTIVES

To enter into joint ventures with other levels of government and with the private non-profit organizations to acquire and restore structures of national historic significance which deserve more than a plaque but do not warrant acquisition by DOE as a national historic park.

### AUTHORITY

Key: Historic Sites and Monuments Act (1952/53) c. 39, s.1
Parks Policy, Part II - National Historic Sites 2.3.3

### DESCRIPTION

The Historic Sites and Monuments Board recommends to the Minister of the Environment the appropriate means to commemorate persons, places and events of national historical significance. In some cases, the recommendation concerns a structure which, because of jurisdictional, financial or historical reasons, it would not be appropriate for Parks Canada to acquire and operate. In this case, the department may enter into a joint venture with provinces and/or municipalities, as well as with private non-profit organizations.

Once agreement is reached, Parks Canada may provide technical assistance and cost-share the acquisition and the restoration of the basic exterior structural elements. Treasury Board Minute 623840 and the amending Minute 717422 establish guidelines governing the percentage of the total cost which DOE can assume.

An agreement covered under this program is contingent on the other party (parties) assuming responsibility for the on-going maintenance of the structure, and its operation for the benefit of the general public in an appropriate way over a stated period of years. Agreements can be renewed if all parties agree.

This program is capital intensive. Resource requirements depend on agreements in force or under negotiation at the time of planning. At the moment, there are no major commitments extending beyond 1985/86 because of the restraint on new initiatives in the federal public service as well as the impact of the slow economy on potential second and third-party partners.

The system plan for Historic Parks and Sites identifies a number of major Canadian historic themes and sub-themes. These are used to establish relative priorities for future agreements.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | -- | -- | -- | -- |
| O&M | -- | -- | -- | -- |
| Grants | 25 | 38 | 38 | -- |
| Capital | 365 | 455 | -- | -- |
| **TOTAL COSTS** | 390 | 493 | 38 | -- |
| Revenue | -- | -- | -- | -- |

Person-years - (There is negligible staff support to this program provided from Parks Canada Headquarters. Regional staff are involved in the negotiation of agreements, but the amount of effort cannot be quantified. All such resources are identified in the Historic Parks and Sites Program Assessment.)

**BENEFICIARIES**

Parts of the mandate of the Minister of the Environment are carried out in the form of joint ventures with other levels of government and the private sector.

Where the private sector participates in an agreement, the taxpayer benefits from the achievement of mandated goals at reduced cost.

Municipalities benefit from the opportunity to find partners to share the cost of the restoration of historic structures.

The portion of the private sector serving visitors to the region benefits from the increased tourist activity associated with an historic site.

**POLICY REVIEWS, EVALUATION, AUDITS DONE ON PROGRAM**

There was no explicit reference to this program in either the comprehensive audit or the 1983 A-Base Review.

## ASSESSMENT

The objectives of this program are still valid. The involvement of the voluntary sector in achieving heritage goals is especially desirable. The taxpayer receives excellent value for his investment while those participating receive their compensation through personal satisfaction.

The results have been impressive. Outstanding examples include: in Newfoundland, Christ Church at Quidi Vidi, and the St. Thomas Rectory at St. John's; Farmers' Bank, Rustico, PEI; the Halifax Water Front buildings at Historic Properties, and Prescott House, Wolfville; the Fredericton Military Compound; in Quebec, the Château des Gouverneurs, Sorel and Maison Maillou, in Quebec City; Billings House, Ottawa, Grange House, Toronto, Matheson House, Perth, the Niagara Apothecary, Niagara-on-the-Lake, and Victoria Hall, Cobourg; Grey Nun's Old Convent, St. Boniface; Fort Qu'Appelle; the Emily Carr House, Victoria, and the St. Roch, Vancouver.

The activities covered under this program are joint ventures with other levels of government; therefore, transfer to other jurisdictions and privatization are not appropriate. Since project management resides with the other party (parties) to the agreement, any cost overruns that occur are beyond the control of the department; decisions to cover some part of such cost over-runs become political ones. It might well be that a mechanism to retain some control over project management would cost more than would be saved by reducing cost over-runs; this question should be studied.

There are no fundamental reasons for restricting the possibility of including profit-making organizations in agreements.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. To ensure that the Crown avoids sharing in the payment of the cost overruns, the contribution from Parks Canada be a fixed amount rather than a fixed percentage of the final cost. If a major assumption in its original estimating is proven false, the agreement could be renegotiated to change the amount which the Crown will pay.

b. Even though there are no capital resources identified for this program after this year, the program be retained and be considered in the allocation process when the Minister feels that the economic climate is suitable for new capital investments to be made in approved programs.

c. The part of Parks Canada Policy which prohibits the participation of profit-making organizations be changed.

# AGREEMENTS WITH PROVINCES FOR CO-OPERATIVE HERITAGE AREAS

## OBJECTIVES

To enter into agreements with other federal departments, other levels of government and interested organizations for the co-ordinated development of areas of natural and/or cultural heritage for the purposes of preservation, conservation, recreation and tourism.

## AUTHORITY

Key: Government Organization Act (1979)
Parks Canada Policy (1979)

## DESCRIPTION

Co-operative heritage areas may be of several types. In some cases, there may be a variety of distinctive natural and cultural resources of national, regional and local significance, concentrated in an area so that co-ordinated development by various interested parties contributes to the mandates of several organizations in an effective and efficient way. In other cases, there may be an example of one particular type of heritage resource which is considered to be of national significance (historic land and water routes, urban conservation areas or rural cultural landscapes) whose preservation requires co-operative action. In identifying potential co-operative heritage areas, provinces and territories play a key role so that proposals reflect their priorities and responsibilities too.

Since the 1983 A-base review recommendation to separate the heritage canals and heritage areas programs, the first such agreement, the Canada-Ontario Rideau-Trent-Severn (CORTS) agreement has been managed through the Heritage Canals program. At the moment, there are two agreements for heritage areas in place, the Red River agreement with the province of Manitoba, and the Alexander MacKenzie Grease Trail agreement with British Columbia. There are a number under consideration, including one with the Government of Saskatchewan for an area between Saskatoon and Prince Albert which includes the national historic park at Batoche.

The agreement with the province of Manitoba for the Red River heritage area provides an excellent example of how the program is implemented. During the 1970s, it was recognized that Parks Canada had an excellent national historic park at Lower Fort Garry, and there were some provincial historic sites along the river between the national historic park and the nationally significant historic site at the Forks of the Red and Assiniboine Rivers. The agreement which was signed in 1978 called for an expenditure of $12M over seven years, with each party contributing half. The federal projects include the St. Andrews Rectory, the Netley Marsh, and a national historic park (including a visitor reception centre) at the Forks. Provincial projects include a number of provincial historic sites along the river, an archaeological site at Lockport, and the Forks River Bank Park which will surround the national historic park at the Forks. There were also some shared programs such as the restoration of the Trappist Monastery, the St. Boniface Docks and River Bank, and the Red River Parkway. By mutual agreement, the program will be extended for a further 3 years to allow for earlier delays in acquiring certain critical railroad lands from the CNR.

The agreement with British Columbia for the Alexander MacKenzie Grease Trail (Quesnel to Bella Coola) is a little different. This five-year agreement calls for the expenditure of $1.5M by each party; there are no shared projects. The federal programs deal with the protection of the national heritage areas (the Home Ranch, the petroglyphs at the Kluskus Lake archaeological site, the petroglyphs at Thorsen Creek, the Friendly Village archaeological site, and the Alexander MacKenzie Rock). The provincial projects are largely recreationally oriented. However, there has been little progress so far and the parties are negotiating a postponement of the beginning of the program.

**PROJECTED EXPENDITURES (000s of dollars)**

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries | 90 | 90 | 90 | 45 |
| O&M | -- | -- | -- | -- |
| Grants | -- | -- | -- | -- |
| Capital* | 1,318 | 496 | 1,663 | 1,089 |
| **TOTAL COSTS** | 1,408 | 586 | 1,753 | 1,134 |
| Revenue** | -- | -- | -- | -- |
| Person-years | 2 | 2 | 2 | 1 |

* These resources are included in the National Historic Parks and Sites Program, and are not supplementary to them. They include resources being requested in the approval request for extension of the agreement with Manitoba.

** This is the program which does the restoration. Revenue from the operation upon completion will be included in Historic Parks and Sites.

## BENEFICIARIES

The preservation and commemoration of specific locations directly associated with Canadian history benefits all present and future Canadians. The co-ordinated manner in which these projects are planned benefits the travelling public which receives a more integrated view of the heritage in an area and also is able to make more efficient use of its time. This latter fact increases the possibility of a heritage area being identified as a tourist "destination", thus increasing its economic potential; that segment of the private sector serving the travelling public thus reaps increased benefits. Because of the enthusiasm with which other levels of government treat such agreements, there is a positive effect on federal/provincial relations.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

The 1983 A-base review stated "co-operative heritage agreements are a valuable process for Parks Canada. They allow flexibility in exercising Parks Canada mandate, can limit costs, and may well be an important process in the future for dealing with the provinces".

## ASSESSMENT

The one program which is well advanced demonstrates the validity and achievability of the objectives of this program, at least in its federal/provincial context. Moreover, the prediction made in the A-base review about the way of the future for working with provinces has clearly been verified; the approach is viewed very positively by the provinces and they are eager for further agreements when the financial situation at both levels improves. Only a decision to stop the protection and preservation of natural and cultural heritage could affect the basic rationale of this program.

This particular approach is realistic with regard to achieving the objectives of Parks Canada, the provinces, and those concerned with tourism. Furthermore, whether intended or not, it meets the observation often made about Parks Canada that little attention is given to regional planning. By its nature, the program stimulates tourism, and enables the stakeholders to make the necessary provisions for serving the travelling public. Given the present fiscal climate at both federal and provincial levels, the program costs are reasonable because of the contribution of tourism to the economy. Therefore, when the fiscal climate improves, increased emphasis should be given to this co-operative approach. Because it is increasingly difficult and expensive to establish new national parks in the provinces, this mechanism of meeting the Parks Canada mandate provides a better way of establishing a sequence for undertaking historic restoration projects which is sensitive to regional priorities.

Any reduction of the program at this time would require provincial agreement; this would not be welcome by many provinces.

At present, this particular program is so new that it is not well-distributed across the country; it is a relatively new approach, and if applied appropriately in the future, can benefit all regions of Canada.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The program be incorporated into National Historic Parks and Sites to ensure that the provincial contributions to the establishment of national priorities for the order in which sites are selected for action are not overlooked.

b. Existing agreements be honoured. For future agreements, the federal role should not be one of leadership, but rather should be responsive to provincial proposals once the fiscal climate is appropriate for new undertakings.

c. To provide all concerned the opportunity to plan better, to establish a more rational set of priorities, and to estimate costs more reliably, provinces be encouraged to make their preliminary proposals for future agreements even before it will be possible to negotiate them. This will ensure a better regional distribution than would be possible on a first-come first-served basis. When ministers feel that the time is appropriate for negotiating new agreements, some annual ceiling on the expenditures under this program should be established. (While this could force some agreements to be spread out over a longer-than-normal time-frame, it would keep the program from being open-ended.)

d. When future agreements are negotiated, the scope of the potential federal involvement be carefully considered. For example, when a visitor reception and orientation centre is being planned, the possibility of cost-sharing both the initial capital expenditure and the ongoing operations with the other parties of the agreement could be explored. Moreover, the basic design and construction of such a centre could be undertaken with more emphasis on economy than has typically been the case with Parks Canada in the past.

# CANADIAN HERITAGE RIVERS

## OBJECTIVES

To protect outstanding examples of the major river environments of Canada in a co-operative system of Canadian heritage rivers, and to encourage public understanding and enjoyment of this natural heritage so as to leave it unimpaired for future generations.

## AUTHORITY

Key: Parks Canada Policy
Proposed amendments to National Parks Act

## DESCRIPTION

This program is delivered through the National Parks program and refers to agreements with provinces and territories for the establishment and maintenance of the Canadian Heritage Rivers System.

This program activity, established in 1983, is a co-operative effort designed to give national recognition to Canadian rivers (or reaches of rivers) that are outstanding in their natural setting, the recreational opportunities they offer, or their historical interest (according to criteria shown in the attachment). The program involves the development of management systems for designated rivers so that the natural and human heritage they represent is conserved and interpreted, and the opportunities they possess for recreation and heritage appreciation are realized by residents of and visitors to Canada.

It is a basic principle of the Canadian Heritage Rivers System that the management of any designated river remains under the jurisdiction which controls it, and which is therefore responsible for the costs associated with management. Thus, the bulk of the costs of management accrue to provincial and territorial governments; the federal government is responsible for management costs only for those reaches of rivers within National Parks. It is estimated that, in a typical case, it will cost about $100,000 to nominate a river, shared 50/50 by the managing authority and the federal government. Subsequent costs of $200,000 for planning, up to $200,000 for capital and $50,000 per year for management would be paid largely, but not entirely by the managing authority.

Participation by provinces and territories in the Canadian Heritage Rivers System is obtained through an agreement to join the system. Such participation involves, at a minimum, representation on the Canadian Heritage River Board, which is made up of one representative from each participating jurisdiction and meets semi-annually. Once a designation is made, participation further requires the management of the river and all associated costs.

The role of the Board is to receive nominations and to recommend the designation to the appropriate federal and provincial ministers, to approve the information program developed in Parks Canada, and to distribute the available funding for river studies (see further below). In addition, the management plan for each nominated river is lodged with the Board, though full authority for implementation remains the responsibility of the managing jurisdiction.

Parks Canada provides the secretariat for the Canadian Heritage River Board and funds its administrative costs, the costs for an information program about the heritage river system, and up to 50 per cent of the study costs leading to nomination and designation of a river. Total funding over 5 years (beginning in 1983/84) is $1 million. However, Parks Canada's main roles are to encourage public awareness of heritage rivers in the system and to encourage growth in the system. Strong emphasis will be placed on both tourist potential and the "mystique" of heritage designations.

The federal government, both territories and six of the ten provinces have joined the system. (The missing provinces are PEI, which has no appropriate rivers, and Quebec, Alberta and British Columbia, which are concerned about federal/provincial and/or resource management issues.) Eight rivers (or reaches) have already been nominated, and an equivalent number of nominations are expected shortly. (Because the program is so new, no river has yet received formal designation.) The system will provide a high public profile similar to that created by the World Heritage Convention, which, it is hoped, will be sufficient to ensure that designated rivers are in fact managed in accordance with the plan.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | 43 | 43 | 43 | 43 |
| O&M | 180 | 160 | 160 | 160 |
| Grants | -- | -- | -- | -- |
| Capital | -- | -- | -- | -- |
| **TOTAL COSTS** | 223 | 203 | 203 | 203 |
| Revenue | -- | -- | -- | -- |
| Person-years | 1 | 1 | 1 | 1 |

(In addition to the one person-year assigned to the Secretariat for the Canadian Heritage Rivers Board, approximately two person-years are devoted to joint research with the provinces, planning for rivers within federal jurisdiction, and development of criteria for the Board. These person-years, located with the National Parks System Division, are incorporated in the profile on National Parks.)

**BENEFICIARIES**

As avenues for transportation and communication, rivers represent perhaps the single most distinctive feature in Canadian development to the 20th century, which includes their use by native people and their role in the fur trade and exploration, logging, power and so on. Most recently, the popularity of rivers as recreational attractions in the U.S. has increased tremendously. Canada's rivers are rapidly gaining in popularity as well and are drawing more and more domestic and foreign tourists. To cite just one figure, the number of Canadian households owning a canoe doubled between 1976 and 1982 (Statistics Canada, 1984 Tourism and Recreation, Statistical Digest). Direct benefits of this new activity accrue to the users of the heritage rivers (including both water-borne and shore-based use), and indirect benefits accrue to the businesses that supply transportation, food, accommodations, equipment and services to those users. In addition, less quantifiable benefits are received, on the one hand, by those interested in the preservation of Canada's natural and historical heritage and, on the other hand, by those downstream who depend upon aquifer recharge, flood control, etc.

## POLICY REVIEWS, EVALUATION, AUDITS DONE ON PROGRAM

In 1983/84 two extensive reviews of the program were undertaken: the comprehensive audit and the A-Base review. However, the program was at that time in its first year of operation, so there were no substantive comments about it.

## ASSESSMENT

The objectives of the program are closely related to those of the National Park Act though they are achieved by different means. It is, however, too early to determine whether they actually are being achieved. While initial indications are positive, the absence of key provinces from the program is a matter of concern with regard to overall national effectiveness. The potential for conflict appears to be high even if it has not occurred to date.

Those provinces which are members of the Canadian Heritage Rivers System are satisfied with the program and make two points: first, this approach of co-operative agreement on standards and criteria and provincial/territorial management is a model for future co-operation on parks; second, the designation of a river as a part of the system will be a major plank in their tourism promotion. All members of the system have committed themselves to nominate at least one river although this is not a requirement of membership.

The program does not appear to give sufficient attention to dissemination of information and to promotion of river use.

## OPTIONS

In view of the above, the study team recommends to the Task Force that the government consider the following measures:

a. The program be continued with at least its current level of funding.

b. Quebec, Alberta and British Columbia be encouraged to join the system by emphasizing that, as structured, it poses no threat to their sovereignty. This could best be accomplished by reassurance from provinces already in the system.

c. The Canadian Heritage Rivers Board discuss the nature and range of conflicts that might arise under the existing river system, review alternative means for resolving them, and make suggestions to member provinces and territories.

d. An active river-by-river information system be established to encourage use and to offer interpretation and education. Parks Canada might propose a common format and structure for the convenience of users, but the managing authorities should prepare and print them as they will be the immediate beneficiaries.

**ATTACHMENT**
**Excerpt from**
**Canadian Heritage Rivers System (CHRS)**
**Objectives, Principles and Procedures (Summary)**
**Parks Canada**
**(May 1983)**

## 4. Guidelines for the Selection of Canadian Heritage Rivers

### 4.1 Principles

The CHRS provides a vehicle for the recognition and conservation of rivers of outstanding Canadian heritage value; this value is obtained when a river is considered an outstanding representative of or unique in a province or territory.

Canadian Heritage Rivers will be nominated and selected in accordance with one or more of three sets of heritage value guidelines, as summarized in Section 4.2 below:

- natural heritage value;
- human heritage value; and
- recreational value.

Canadian Heritage Rivers must also meet one set of integrity guidelines, as summarized in Section 4.3 below.

The selection guidelines will be applied in a manner which allows all provinces and territories to participate in the CHRS.

Should a Canadian Heritage River have lost those values for which it was designated or should the managing jurisdiction formally request it, that river will be removed from the CHRS.

### 4.2 Heritage Value Guidelines

Outstanding Natural Heritage Value will be recognized when a river environment is an outstanding example of a major geological, fluvial, geomorphological or biological process or contains unique, rare or outstanding examples of natural phenomena, formations or features, areas of exceptional natural beauty or habitats of rare or endangered species of plants or animals.

Outstanding Human Heritage Value will be recognized when a river environment has had a major impact on the historical development of Canada, has been strongly associated with important persons, events, movements or achievements, or contains man-made structures, works or sites which are unique, rare or of great antiquity or which are highly representative of major themes in Canadian history.

Outstanding Recreational Value will be recognized when a river environment presents an appropriate combination of recreational capability with natural and aesthetic values in order to provide an opportunity for outstanding outdoor recreational experiences which can be enjoyed without significant loss to its natural, historical or scenic qualities.

### 4.3 Integrity Guidelines

For designation to the CHRS a river environment must be of sufficient size and contain all or most of the key resources and ecosystem components to demonstrate and provide for the continuity of the processes, features or activities which give that river its outstanding Canadian heritage value.

# AGREEMENTS FOR CANAL BRIDGES

## OBJECTIVES

To provide for the upgrading and replacement of non-historic canal bridge structures.

## AUTHORITIES

Key: Government Organization Act (1979)
Parks Canada Policy (Heritage Canals, 1.2, 2.2, 3.3)
Navigable Waters Protection Act, Part I (R.S. 1970, c. N-19)
Department of Transport Act (1970) Sections 25 and 26
Heritage Canals Regulations, SOR/84-116

## DESCRIPTION

This program profile describes a process used in the Heritage Canals program. It is covered principally by Management Directive 5.1.2, "Financial Payments Towards Upgrading and Replacing Bridges", and includes both historic and non-historic bridges and both fixed and movable bridges. Other relevant Management Directives include 5.1.1 "Preparation of Bridge Agreements" and 5.4.1 "Identification and Treatment of Historic Bridges".

Bridges over canals operated by the Department of the Environment (DOE), except where ownership has been transferred, are the responsibility of the program. These bridges have been classified by the program according to the historical integrity of the structure and its importance to the historical character of the local environment. Four classes of bridges exist:

a. historic bridges for which Parks Canada retains full authority and to which no significant change is permitted;
b. bridges which have historical significance, one aspect of which is designated for preservation;
c. bridges which may be modernized but which, for the integrity of canal purposes, should maintain some historic appearance; and
d. bridges to which no historic content applies.

These classifications will determine the type of treatment afforded when the bridge needs to be repaired, upgraded or replaced.

In those cases where historical integrity is not a factor, the department may negotiate agreements to upgrade or replace or transfer ownership of non-historic bridges. Such agreements may include a one-time financial contribution that removes the obligation for any further payments by the federal government.

While not specifically stated in Management Guidelines 5.1.2, it appears that all existing agreements with financial implications involve movable bridges (i.e., those that lift, turn or otherwise permit the passage of vessels). For fixed bridges, the only significant restriction involves height guidelines, which are covered by Management Guidelines 5.8.1.

## PROJECTED EXPENDITURES

Expenditures in the form of grants and contributions for 1983/84 were $1.6 million and in 1984/85 $1.4 million. Expenditures for future years will be negotiated later. At the moment there are no further financial commitments, but legal obligations under the several Acts continue. Less than 0.1 person-years are involved in this program.

## BENEFICIARIES

The municipalities receive a modern structure to suit current and anticipated traffic demands, and the department is absolved from future operation and maintenance costs. In some cases, specific requirements, such as ability to handle modern fire trucks and snowplows, are a factor in the need to upgrade or replace bridges.

## ASSESSMENT

The objectives of the program are valid, but they could be made much more explicit. The distinction between historic and non-historic bridges is logical. However, the objective may not apply to all types of non-historic bridges, and the term "non-historic" is ambiguous for two of the four classes of bridge.

The objectives of the program are being achieved.

The Real Property Management Team made the following observation on this subject.

> "Canals: The approach taken with bridges over historic canals provides an example of how long-term, continuing costs can be reduced or eliminated. As the successor to the agency that built the canals, Parks Canada is responsible in perpetuity for the maintenance and operation of crossing places at points where the canals cut existing roads and railways. However, where these swing or lift bridges cease to meet the carrying capacity required by the appropriate road or highway authority Parks Canada is usually prepared to contribute to the upgrading project - usually a new high level bridge - on the basis of the replacement cost of the old bridge. In exchange for this one-time contribution the highway authority assumes full responsibility for the new bridge in perpetuity. It has been suggested that a Parks Canada contribution of $1.0 million toward a $3.0 million bridge could eliminate a perpetual $50,000 annual direct operating and maintenance responsibility. The replaced bridge is normally demolished unless it is of particular historic or architectural interest. This is an intriguing approach which could possibly have other applications in Parks Canada programs. However savings of this nature point out the failure of government departments to appreciate that an outlay of $1.0 million will cost 12 per cent or more in interest costs."

This study team suggests that not only is the annual maintenance "in perpetuity" avoided, but also the requirements for periodic recapitalization and the person-years for negotiation of agreements. This involves the analysis of financial trade-offs.

## OPTIONS

Therefore, the study team recommends to the Task Force that the government consider the following measures:

a. The program objectives be restated to make it clear what specific type of non-historic bridges are at issue.

b. The program be designed in such a way that the federal government can divest as many bridges as possible and pass them to other levels of government or, in a few cases, to other agencies of the federal government. The classification described above seems logical, and it should be fully utilized in determining which bridges need be under federal control, and to what extent the federal government need contribute to their upkeep and maintenance.

## NATIONAL BATTLEFIELDS COMMISSION

### OBJECTIVES

To acquire, restore and maintain the historic battlefields at Quebec City to form a National Battlefields Park.

### AUTHORITY

Key: National Battlefields at Quebec Act (SC 1908) c. 57-58. Included in Schedule B by SC 1983-84, c. 31 and assigned to the Minister of the Environment by P.C. (1979)-1618

### DESCRIPTION

The Commission is a Crown Corporation within the meaning and purpose of the Financial Administration Act. It is responsible for the preservation, management and operation of the National Battlefields Park (known to many Canadians as the Plains of Abraham) at Quebec and is funded through the annual appropriations of the Department of the Environment. The Act provides for the appointment of nine Commissioners, seven by the Governor-in-Council and one each by the Government of Ontario and Quebec. The Chairman is appointed by the Governor-in-Council which also appoints the Secretary. All of the Commission's real property assets are in Quebec City and the Sillery.

Up to and including 1984/85, all expenditures, including resources for person-years, were obtained from other O&M. As of 1985/86, the financial resources have been broken into the standard categories as a result of the changed status of the Commission under the Financial Administration Act.

### PROJECTED EXPENDITURES (000s of dollars)

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries and Wages | -- | 1,221 | 1,221 | 1,221 |
| O&M | 2,866 | 592 | 592 | 592 |
| Grants & Contributions | -- | 1,033 | 1,033 | 1,033 |
| Capital | 66 | 63 | 88 | 107 |
| **TOTAL COSTS** | 2,932 | 2,909 | 2,934 | 2,953 |
| Revenue | -- | -- | -- | -- |
| Person-years | 47 | 47 | 47 | 47 |

## BENEFICIARIES

Because of the scarcity of public leisure parks in Quebec City, the National Battlefields Park has become de facto a city park, providing for recreational as well as historical and cultural activities. The travelling public benefits from the opportunity to visit a site which played such an important part in Canadian history. The segment of the private sector serving the travelling public benefits from any stimulation of tourism due to the existence of the park. While conventional counting of visitors is not possible because of the physical layout of the area, it is estimated that approximately 1 million persons visit the park annually.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

In 1983, a comprehensive study of the organization and administrative procedures of the Commission was carried out, and improvements were made as a result. Also in 1983, a revised Management Plan for the park was developed following extensive public consultation.

## ASSESSMENT

The objective as stated is a little obsolete. Most of the appropriate acquisition and restoration has now been completed, so the emphasis should now be on maintenance.

The Real Property Management Team reviewed this program as part of its activities, and stated in its report that the Commission fulfils its mandate in a most pleasing, efficient manner that effectively portrays the history it was meant to protect. This study team has no reason to contradict that view.

The operation of the National Battlefields Park is totally separate from any other activities of Parks Canada in Quebec; the only role of the Quebec Regional Director is to offer advice to the Commission. This study team agrees with another conclusion of the Real Property study team that there is no apparent reason why the National Battlefields at Quebec should be administered differently than other equally important national historic parks and sites in other parts of Canada.

Eleven of the 47 person-years used by this program are distributed to administration and 36 to property management/grounds upkeep. It is probable that an integration of these activities into the programs of the Quebec Region of Parks Canada could lead to some savings in administrative costs, and a significant opportunity to contract out major portions of the other activities.

**OPTIONS**

The study team recommends to the Task Force that the government consider transferring the responsibility for the park to the Quebec Region of Parks Canada, with the instruction that all possible savings in the administrative overhead be effected, and that as much as possible of the property management and grounds upkeep be contracted-out. This could lead to savings of about $115,000 and 16 person-years, however, some changes in legislation would be required.

## ATMOSPHERIC ENVIRONMENT PROGRAMS

### Background

Under the BNA Act and the Constitution Act the federal government has the responsibility for the safety and security of the life and property of Canadians. Transportation, including the use of marine waterways and the implementation of international agreements are also federal responsibilities. Weather, climate, and ice services and associated research and development activities are essential in support of these federal responsibilities. The Atmospheric Environment Service (AES) of the Department of the Environment (DOE) provides this support. Matters relating to meteorology were among the duties, powers and functions assigned to the Minister of Environment under the Government Organization Act (1979).

The current level of weather service in Canada has evolved since 1871 when weather reporting and storm warnings were first provided to the marine industry. Today, weather services are provided for the safety and security of all Canadians and to support the economic sector. A total of nine weather centres and 64 weather offices provide up to four weather forecasts daily. The service operates on the concept of a single service in which one federal agency provides the necessary meteorological service in Canada. A basic infrastructure including observations, communications, computer analyses and prediction, information dissemination and associated research and development, supports this single service. Information from the basic infrastructure is used to provide public forecasts and severe weather warnings, for national security and for enhanced service to the economic sectors.

The national headquarters for AES is located in Downsview in Metropolitan Toronto. The Assistant Deputy Minister with a small support staff is based in Ottawa. Ice Central and the Canadian Meteorological Centre, which are part of national operations are located in Ottawa and Montreal, respectively. There are six regions, with regional headquarters located in Vancouver, Edmonton, Winnipeg, Toronto, Montreal and Halifax. Almost half of the total staff are part of the regional operations in weather centres and offices in strategic locations across Canada.

In 1984/85 the resource expenditures were planned at $197.9 million and 2273 person-years, with revenues of $29.2 million. The 1985/86 Main Estimates call for an expenditure of $217.3 million and revenues of $31.8 million with person-year utilization projected at 2303. In constant dollars, the weather service's budget is the same as it was in 1976. Since 1968, area weather service coverage has increased by 50 per cent and demand for service as measured by the number of requests has increased by over 150 per cent in the last ten years. This increased level of service has been possible through increased efficiency and the use of modern technology.

## Summary Assessment and Key Direction

Throughout the review, the study team continually faced the question of the appropriate level of service which AES should provide. Canadians expect as a right, to be provided with accurate weather forecasts and severe weather warnings. With the increasing appreciation of the use of weather information in improving safety situations and in improving returns in the economic sector, there have been increasing demands placed on AES to provide these specialized services. Because it has the major body of knowledge and expertise in this area, it is well-placed to provide this support. However, in these times of limited or non-growth of budgets, this poses a dilemma for AES managers who must decide which of the various specialized services they should provide and which ongoing activities they should reduce or terminate. There is no question the primary role is to provide for all Canadians regular public weather forecasts and severe weather warning. The present infrastructure should serve as a basis for providing the expected level of service and for the determination of the level of service.

Once the core level of service has been clearly identified, the preparation of a plan for contracting-out, development of the private sector, establishing centres of excellence at universities, etc. can be undertaken. Also, cost-recovery from other departments and agencies can be determined and phased in for those departments representing a constituency currently receiving enhanced services. The study team found that opportunities exist in all of the programs reviewed for greater private sector involvement and cost-recovery from within government.

The perfection of the science of meteorology requires enormous amounts of data. The use of satellites and automated synoptic weather stations coupled with attendant expansion of computer capacity has greatly improved forecast capability. This data with added input from climatological observing stations is stored in the climate archives. As more and more data is collected, processed and stored, and more resources are required to work with it, it becomes essential that a determination be made on what and how much data should be maintained. The relationship of climate data and water quantity and quality data, where another large data bank exists, is self-evident. Opportunities for joint handling, storage and dissemination need to be explored. The Major Surveys Study Team has also recognized this and are encouraged to address the potential consolidation of these activities.

We found that good research and development is essential to the support of the AES mandate. The science of meteorology presents many opportunities and challenges for R&D as do the emerging issues of toxic chemicals and acid rain. The nature of the programs and their review did not lend itself to a co-ordinated review of the total R&D effort in AES nor were we left with the comfortable feeling that priority setting and co-ordination of R&D activities was as complete as it could be. The presence of the major core of meteorological expertise within government has inhibited the establishment of expertise in the universities and in the non-government sector.

Therefore, the study team recommends to the Task Force that the government consider the following:

### A. Level of Service - "How Much Should It Be?"

**Take the necessary steps to establish the core level of service which AES should provide. Any change in the current level of service should proceed through careful consultation and planning because of potential public reaction.**

There have been a number of studies undertaken by AES in recognition of the need to identify the level of service it should be responsible for. The most recent study in 1983 identified some general criteria to determine level of service and provide a framework whereby the core level of service could be defined. Because of the long history of captive involvement by AES in the provision of weather services and the expectation of clients, either government or non-government, that AES should provide all weather services, the study team found that AES was having great difficulty in addressing this issue. This study team is of the view that the basic infrastructure serves as a sound basis for the determination of the core level of service. Consideration could be given to reducing the number of daily forecasts, maintaining current level of accuracy of public forecasts, elimination of climate consultation services, etc.

## B. "The User Pays!"

**Establish a policy whereby those government departments and agencies which obtain or require enhanced or specialized services to serve their constituencies provide the necessary resources to AES for such services. Such departments and agencies should consider cost-recovery from the beneficiaries.**

Coupled with the determination of the core level of service is the need to implement a "user pays" concept for enhanced or specialized services. Currently, some departments such as Transport (Air) and National Defence supplement AES funds for such additional services while others such as Transport (Marine, except Ice Services), and Energy Mines and Resources (Canada Oil and Gas Lands Administration) do not. The study team feels that if there is truly an economic benefit from the added services, these other departments or agencies should not only provide the support but should also consider means of recovery from the beneficiaries.

## C. Contracting-Out - "Yes We Can!"

**Identify the activities in AES which have potential for contracting out or privatization, particularly in the Climate, Research and Weather Services programs. This should be actively pursued by AES by encouraging proposals from the private sector for the provision of services.**

The study team found varying levels of effort within AES in contracting-out and in encouragement of the non-government sector. The Ice Services program routinely directs requests for specialized services to the non-government sector and this has resulted in the development of a capable non-government sector industry.

The study team found that the potential exists in the Climate, Research and Weather Services programs to effect more contracting-out and/or privatization of their activities. The development of centres of excellence and the undertaking of research at universities should also be pursued. A number of stakeholders advised that a capability does exist outside of AES and, where it does not, could be readily developed over time with some encouragement through personnel exchanges and contracting-out. The identification of activities must be followed by a specific plan of implementation which requires more time in some areas than in others. The study team is confident that over time the result will be a reduction in the resource levels in AES with an accompanying increase in non-government sector capability. Another area which offers opportunities for contracting-out is the servicing and maintenance of the large number of technical instruments and other special equipment in AES.

## D. Data - "How Much Do We Really Need?"

**Undertake an immediate review of all environmental quality data collection, handling, processing and dissemination activities to determine how much is required, for what purpose, by whom, etc., to establish what the appropriate level of activity should be.**

The amount of data generated, particularly as it relates to the atmospheric environment, has increased several times over in recent years owing to the use of satellites, more automated technology and greater numbers of stations. Some of the data are required immediately, but are all eventually stored in data banks such as the climate archive for atmospheric data and systems called NAQUADAT and HYDAT for water quality and water quantity data respectively. It is recognized that some data are essential in forecasting of weather, floods, and for research and environmental quality monitoring, but it is also essential that some controls be established, otherwise there will be continued requests for more resources to handle the increasing amounts of data.

**Opportunities for joint data collection should be pursued.**

There is a close relationship between climate and water management data. Thus, the opportunities for combined data handling, processing and dissemination should be explored to determine where consolidation of these activities will result in any economies. The Major Surveys Study Team which is also addressing this issue should pursue this further.

## E. Integrated R&D Management

**Establish an Advisory Board of users to set priorities and level of effort for atmospheric research activities which should be demand driven.**

It is the view of the study team that the present structure of having Air Quality, Atmospheric Processes and Meteorological Services research organizationally within the Atmospheric Research Directorate, with Ice and Climate outside, combined with the planning process which has research in four program activity areas, did not appear to lend itself to good overall priority setting of research activities. The study team was advised that priorities were established within programs and then brought before the AES Management Committee. The extent to which external input is provided to the establishment of research priorities would improve with a "single window" entry point. While the study team did not have an opportunity to examine this area there do appear to be some common areas of interest related to satellite, radar and communications in the Ice, Weather Services and Atmospheric Research areas which would benefit from being in the same Directorate. Currently, there are peer committees advising in the specific program areas. Some of these committee members along with policy makers and a broader non-government representation of users should be considered for the Advisory Board.

## Notes

1. There are a number of other proposals related to reducing irritants, improving service to the public and effecting more cost-effective operations which are contained in the program assessments.

2. The Auditor General's Office and a departmental internal audit of AES programs are nearing finalization. The study team was advised that the management of demands, public forecast preparation and dissemination and possible organizational changes would be addressed, so these aspects were not looked at in any detail.

## WEATHER SERVICES

### OBJECTIVE

To provide weather and sea state information, forecasts and advice for the safety of Canadians, the security of their property, the support of economic and social activities and the protection of the environment.

### AUTHORITY

Key: Government Organization Act (1979)
International obligations (ICAO, NATO, NORAD, WMO).

### DESCRIPTION

Canada has a "single service" weather information system to provide the general civilian needs for weather information, the weather requirements of aviation, and also provides the basic services for the military. This is in contrast to the situation in the United States where there is a civilian weather service, a weather service dedicated to the U.S. Airforce, and a third weather service meeting the global needs of the U.S. Navy.

The overall Weather Services Program in Canada is composed of a number of separate sub-systems.

The National Data-Acquisition System consists of 355 stations (some automatic, some operated under contract) at which a variety of surface weather variables are observed, 33 stations at which soundings of the upper air are made, 12 radar sites, 6 satellite receiving stations, and 400 voluntary observing ships.

The National Communications System transmits the observations from the Data-Acquisition System to sites where they are assimilated and used in the production of additional services. The Communications System has the capacity to handle teletype data, graphic data, and imagery from radar and satellites. The Communications System is also responsible for ensuring that Canadian data are entered into the Global Telecommunications System of the World Meteorological Organization for distribution to other countries, and also for obtaining information from the Global Telecommunications System for use in Canada.

The Canadian Meteorological Centre (CMC) located in Montreal receives observations from the Canada Data-Acquisition System as well as information from around the globe, and employs advanced computer techniques and mathematical models of the atmosphere to generate guidance materials for forecasts of meteorological conditions on a large scale for periods of up to five days.

The National Forecasting System produces the forecasts which are distributed to those Canadians who require them. Professional meteorologists located in Vancouver, Edmonton, Whitehorse, Winnipeg, Toronto, Montreal, Halifax and Gander produce: detailed warnings and advisories of conditions creating hazards for the general public, aviation and marine interests; regional-scale weather forecasts addressed to the general public; regional-scale forecasts addressed to general aviation, as well as detailed aerodrome forecasts; regional-scale marine forecasts addressed to recreational boaters, fishermen and marine transportation; regional-scale forecasts addressed to farmers; regional-scale forecasts primarily addressed to those responsible for detecting and fighting forest fires; and some specialized services addressed to particular clients. These forecasts and personnel from DOE's Atmospheric Environment Service (AES) are made available to the broadcast media which is used as the principal means of disseminating weather information to the public.

The Weather Information Distribution System of the Atmospheric Environment Service consists of a network of 64 weather offices from which weather information is provided as follows: to persons visiting the weather office; over the telephone (perhaps through a message recorded on an automatic telephone answering device); by radio broadcast during which the weather specialist is interviewed; or by a special radio frequency dedicated to continuous weather information (Weatheradio). In 1983/84 Canadians initiated over 16 million contacts with the 64 weather offices.

Research activities are focused on: (a) developing new and better computer models of the atmosphere so that advances in computing power can be used effectively in improving the service and (b) developing ways in which satellite-based information can be used effectively. A major focus at the present time is developing techniques to produce, by automated means, weather forecasts for the period from 24 hours outward; this would allow professional meteorologists at the regional weather centres to concentrate on the forecast for the immediate 24 hours.

Other support to the Weather Services System is provided through operational training for up to 40 professionals and 200 technologists, and through system management and planning.

The requirements of the Canadian military for specialized meteorological and oceanographic information are met by the Canadian Forces Weather Service (CFWS). The Director of the CFWS and over 100 professional meteorologists are seconded from Environment Canada to the Department of National Defence (DND). Technical support is provided by non-commissioned officers of the Canadian Forces. The full costs of the operation of this organization are borne by DND.

Because the atmosphere recognizes no political boundaries, the Weather Services of the world must achieve a major degree of co-ordination and co-operation to be able to meet their internal mandates successfully. This is achieved through the World Meteorological Organization (WMO), one of the specialized agencies of the United Nations. Canada plays a significant role in the WMO. Other international agencies whose activities have an impact on this program include the International Civil Aviation Organization, the International Maritime Organization, NATO and NORAD.

Activities related to the Weather Services Program have supported Canada's claims to sovereignty on both coasts and in the North. For example, the fact that Canada has, for a period of time, issued weather forecasts for Georges Bank (a marine area over which both Canada and the United States claim sovereignty), and for the high Arctic, has strengthened Canada's claim in the World Court respecting those areas.

Responsibility for funding weather services rests primarily with the Department of the Environment, but the incremental costs providing the specialized avaiation services come from the Air Administration of the Department of Transport, and the costs associated with the Canadian Forces weather service from the Department of National Defence.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | 83,421 | 88,439 | 88,362 | 88,452 |
| O&M | 49,563 | 52.150 | 51,713 | 49,255 |
| Grants | 666 | 743 | 761 | 761 |
| Capital | 14,429 | 15,294 | 15,569 | 16,109 |
| **TOTAL COSTS** | 148,079 | 156,626 | 156,405 | 154,577 |
| Revenue | 14,694 | 15,945 | 15,550 | 15,937 |
| Person-years | 1,873 | 1,880 | 1,880 | 1,881 |

## BENEFICIARIES

Because weather services are provided in the interests of safety and security, for public convenience, and as a contribution to the economic development of various sectors, virtually all Canadians derive some benefit from the services provided. For example, the primary industries such as agriculture, forestry, energy and fishing are heavily dependent upon weather services for economic good health, and other sectors such as transportation have to consider the impact of weather on safety on a daily basis.

The research and development supported under this program have resulted in the development in Canada of a number of high technology products which have become successful internationally (e.g., satellite receiver equipment by MDA Corporation of Vancouver).

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

Marine Weather and Ice Services were subjected to a departmental internal audit in 1982. The audit resulted in very few findings at the operational level. Clients (the Departments of Transport and Fisheries and Oceans) supported the need for the services provided and expressed general satisfaction with outputs. The auditors found some gaps in service to the North and to offshore developments, and identified a lack of strategic and operational planning across AES. They recommended that AES examine its role and establish policies on what services it will provide and how these will be funded. AES senior management considered this to be a comprehensive management audit which made some very relevant and useful observations. Very detailed responses and action statements were made on the recommendations.

An operational audit report on the Canada Meteorological Centre (CMC) in Montreal was conducted for the DOE Internal Audit Branch by Arthur Andersen and Company during September and October, 1982. The general findings of the audit were:

> the CMC is organized and managed for efficient and economic delivery of operational outputs;
>
> co-ordination of planning, priorities and information between related facilities and divisions was effective; and
>
> there were opportunities for improvements in communications with Regional Weather Centres about both Field Services Directorate priorities and CMC products and advice.

AES accepted the recommendations of the Audit Branch, with two exceptions for which reasons for rejection were noted. The Deputy Minister noted that he was pleased with the progress made by AES in implementing the audit report recommendations.

An operational audit report on the Field Services Directorate (Headquarters) was conducted for the DOE Internal Audit Branch by Arthur Andersen and Company in August, 1983. Three main areas of concern were identified:

> the need for better data and analytical skills within the Directorate to improve resource allocation decisions;
>
> a need for updated and tested contingency plans in case of computer or communications network breakdowns; and
>
> the need to enhance the current approach to negotiating and managing the many agreements that AES and the Field Services Directorate have for the provision of service to outside agencies.

The recommendations and suggestions for improvement made by the auditors were accepted by AES and are being implemented to the satisfaction of the Audit Branch.

A recent (1983) interdepartmental study on Level of Weather Services found that Canada's Weather Service was essential, unquestionably a federal responsibility and cost-effective, and that it had high potential to provide significantly increased benefits to Canadians through increasing services at little extra cost. The demand for these services has been increasing as shown by the doubling of the annual direct service contacts with the public to over 16 million over the past eight years. Criteria for establishing appropriate levels of core services were proposed.

AES has drawn substantively on this report in the preparation of its Long-term Plan. (In addition, many of the recommendations made in various internal and external audits have been incorporated into the Long-term Plan. This Plan is currently under revision.)

A joint program evaluation by DND and AES on the Canadian Forces Meteorological and Oceanographic Services in May 1984 found the Canadian Armed Forces to be generally well served. The possibility of DND providing its own meteorological service was explored and rejected. The evaluation found that there is still no cohesive oceanographic program at the federal level. Both departments addressed and actioned the recommendations made in the evaluation.

An operation audit by Arthur Andersen and Company was conducted for AES early in 1985 on the AES Data-Acquisition Activity. This audit has been completed but is still under discussion with AES management. Early action has been initiated by AES to address several of the recommendations made in the audit. Some of the preliminary audit observations are disputed by AES.

The Auditor General is currently finalizing a comprehensive audit of AES operations. While they have reviewed the entire service, they have focused on weather forecast preparation and dissemination since it is the most basic and costly of AES' activities. The report will be finalized in the summer.

## OBSERVATIONS

Canada's large size and geographical diversity presents many challenges to the effective provision of weather services to all Canadians. Temperatures alone can vary from -63°C to +46°C.

The Weather Services Program provides public and marine forecasts for an area of more than 124 million square kilometers. Canada's national atmospheric services are relatively small compared to other countries with comparable geography (e.g., China 61,000 PYs, USSR 110,000 PYs, USA 19,000 PYs, Canada 2,336 PYs). Canadian data gathering networks are well below the level of most developed countries (e.g., Canada has 280 synoptic weather stations compared to Japan's 1,550). The increasing demands for service (e.g., 150 per cent increase in number of requests over the last 10 years) have largely been met through increased efficiencies and more use of modern technology (e.g., automated telephone response); however, major issues to be dealt with are the definition of an appropriate level of service and the maintenance of a modern weather service.

Weather information is constantly before the public and many private users. It is delivered through all the major media channels, such as television, radio and newspapers, thus evoking widespread public and media attention.

The public demand for local weather services has presented a difficult political issue in relation to the need for rationalization (i.e. closing certain weather offices) in response to government restraint measures. Plans to change the program at the weather office at Gander, Newfoundland and to close the weather office at North Bay, Ontario were reversed by political decision. The resources were nevertheless removed from the weather service budget. A difficult resource re-allocation problem exists when budget cuts are demanded and technically appropriate restraint measures cannot be implemented.

The two major interrelated components of the Weather Services Program are:

a. the Observing System (OS); and

b. the Weather Forecast Production and Dissemination System (WFPDS).

Together, the OS and WFPDS and related support activities account for 75-80 per cent of the total AES budget. The Weather Services budget in FY 1984/85 is 1,873 PYs and $148,079,000.

By 1992 many of the existing facilities associated with the Weather Services Program will be replaced and upgraded, provided the necessary funding is made available. A 1985

Treasury Board submission on AES' Capital Replacement Strategy (CRS) requested the following capital funding levels for the systematic replacement of meteorological instruments, technological systems, furnishings and motor vehicles, and the maintenance of physical facilities for all of AES:

*(000s of current-year dollars)

| 85/86 | 86/87 | 87/88 | 88/89 | 89/90 | 90/91 | 91/92 |
|---|---|---|---|---|---|---|
| 26,302 | 28,008 | 29,128 | 30,293 | 31,505 | 32,765 | 34,076 |

* If the program is approved, these figures will replace the capital figures in the program expenditures table.

The CRS was first implemented in 1982, and is claimed to have resulted in more efficient and effective management of AES capital assets due to better co-ordination of planning for replacement of assets, more cost-effective purchasing practices, greater opportunity for competitive bidding, and more opportunity for contracting-out of developmental work for Canadian industry. The overall AES asset base for 1984 was estimated at $246,310,000. The CRS submission of February 1982 has not yet been approved by Treasury Board due to the need to consider new government directions on restraint.

AES is also proposing to automate more of its Observing System and modernize its communications and forecast production system by the mid-1990s. This proposal is included in the AES Long-term Plan and is characterized by:

a. long term capital investments (about $150 million over 10 years including large up-front development costs);
b. increased labour productivity (savings of about 60 PYs);
c. reallocation of PY savings to other high priority initiatives (especially support to specialized agricultural forecasts);
d. increased smaller scale, short-term forecasting; and
e. integration/consistency with World Meteorological Organization global observing system.

Research in Downsview and in Montreal is carried out to improve the forecast service and related data acquisition and processing activities. This work involves computer-oriented research which concentrates on the development of computer models to predict large scale physical, dynamic parameters of the atmosphere. Forecasting methods are also developed and implemented to support regional and local forecasting. In the Arctic and offshore areas, emphasis is being given to atmosphere-related environmental predictions (ice, wind-wave, oil slick motion, etc.). Meteorological satellite research and weather radar development are being carried out, with the radar work related both to its integrated use with satellite data and its direct application to short-range severe storm forecasting. In 1984, a new vector computer, the CRAY 1, was put into operation and resulted in a significant improvement in forecast efficiency.

The AES goals for the WFPDS in 1995 are to develop more precise Day 1 (out to 24 hours) forecasts and to centralize routine production of 24 hours and beyond forecasts at the Canadian Meteorological Centre in Montreal using automated techniques. Between 1986 and 1990, AES plans to open five more regional weather centres with professional meteorologists on staff (thus bringing the total to 14 regional weather centres, each with smaller staff than the present weather centres). Local weather effects and Day 1 weather warnings and forecasts will be tailored more to the specific needs of users than the generic forecasts. The key factors underlying these goals are advances in the science of meteorology and high technology.

The economic value of weather information seems to be well established. A 1983/84 estimate of the first order economic value of short-term weather forecasts yielded the following conservative figures:

| **Sector** | **$ millions** | **Rank (by $)** |
|---|---|---|
| Agriculture | 679.2 - 781.0 | 1 |
| Construction | 96.0 - 136.0 | 2 |
| Fisheries | 32.9 - 40.0 | 7 |
| Forestry | 90.2 | 5 |
| Public and Recreation | 100.0 - 200.0 | 3 |
| Transport | 57.6 - 61.0 | 6 |
| Utilities | 84.7 - 85.1 | 4 |
| **TOTAL** | 1139.6 - 1391.1 million | |

(Reference: Economic Value of Weather Information in Canada, The DPA Group Inc. - November 1984.)

**Note** The above figures can be compared to the FY 1983/84 budget for Weather Services of $124 million. This comparison suggests a minimum cost-benefit ratio of about 10 to 1.

Safety is perhaps the major non-quantified value to which short-term forecasts contribute. It is of relatively higher importance to transportation, fisheries and recreation than to the other services.

A CROP (Centre de recherche d'opinion publique-Public Opinion Research Centre) survey taken between September 17 and October 5, 1984, on a representative sample of Canadians, found that 44 per cent of the people surveyed consulted weather forecasts often or very often before planning leisure activities. At an assumed benefit value of $10 per adult per year, this would translate to a total benefit of $77 million per annum for leisure activities. The survey revealed that 80 per cent of Canadians receive their weather information from the radio or television, with newspapers a distant third choice. About one-half of those surveyed felt the forecasts today were more accurate than those 10 years ago.

In 1983, AES received approximately 15.1 million requests for weather and climate information. Of these, approximately 13 million were public enquiries, mostly handled through automated telephone response. However, the general public receives most of its weather information via the media, not the telephone.

In 1983, AES commissioned a Task Force on the Level of Weather Services. The Task Force, which was advised by a senior committee representing 14 separate departments and agencies, defined Core Services as "those services that are essential to the mission of the department". The following general criteria were considered to be applicable to the determination of Core Service requirements:

a. legislative mission;
b. historical precedent;
c. demands and expectations;
d. ability to respond to demands;
e. benefits that accrue to society; and
f. need for a federal presence.

From these criteria four Core Services were identified:

a. services provided to all Canadians such as the provision of advisories and warnings, current weather information, forecasts and consultation;

b. emergency services required for safety and security and for the protection of the environment;

c. services to meet Canada's commitments to the WMO; and

d. the continuation of accessibility to the data base.

The Task Force concluded that for those services not for the public generally, other departments (federal and provincial) should be responsible for identifying the needs, obtaining the resources and disseminating the information. Any decision about charging for the services should be taken by these departments. The AES should be responsible for performing the service on a full cost-recovery basis where no viable alternative source exists.

The Task Force defined "Level of Service" for Core Services in terms of two components - range and quality. Range describes the type of service, for whom it is being provided and where it is being provided. Quality describes the accuracy, timeliness and utility of the service. The Task Force concluded that general criteria for deciding upon the level of service to be provided are appropriate because they permit a dynamic rather than static determination to be made. The dynamic approach was justified on the basis of the changing needs of society and the rapid advances being made in science and technology. Three sets of criteria were included in the determination of the appropriate level of core meteorological services:

a. societal considerations (e.g. weather sensitivity of activities, potential benefits of weather information);
b. meteorological and technological considerations (e.g., what is possible given the present state of the science); and
c. governmental considerations (e.g. fiscal policies, economic and regional development policies, international commitments, official languages, political sensitivities).

The Task Force identified the greatest unsatisfied demand and need for weather services to be in Canada's North, including the northern tiers of most provinces. The need was justified on grounds of regional sensitivity, safety, demand, environmental protection, economic development and scientific knowledge. Additional data from northern Canada are also necessary to understand and predict weather systems that operate in the North but which affect all of Canada.

AES itself has concluded that the present level of service it provides is appropriate. Therefore, any demands for new services that cannot be provided either through reallocation of existing resources, by acquiring new federal resources, by co-operative arrangements with other agencies, or by the private sector, will be provided by recovering the costs. (Ref. The AES in 1990 - A Strategic Concept.) AES also concluded that the Service's responsibility to support the national economy is the one area where the greatest leverage exists to change the level of direct involvement by AES. AES found this area to be where the greatest increases in demands for new services are projected and which has the greatest potential for cost-recovery, making it potentially attractive to the private sector.

The Royal Commission on the Ocean Ranger Marine Disaster made several recommendations which have implications for the AES Weather Service Program. The recommendations generally relate to the following areas:

the need to adopt and ensure understanding of a standardized weather reporting and forecasting system;

the need to have notations and written reports by drilling unit operators on actions taken, or reasons why no action was taken, when forecasts predict environmental parameters which require defensive or emergency procedures; and

the need for a single system of measurements to be used in all reports in order to avoid misunderstanding and confusion.

AES and the Canada Oil and Gas Lands Administration (COGLA) have consulted and co-operated in implementing the recommendations. There were no major new demands placed on AES Weather Services.

The LeBlond Investigation into the west coast storm of October 12, 1984, resulted in a number of recommendations calling for an increased level of Weather Services activities. Environment Canada has responded to 10 of the 19 recommendations made in the report. The programs and activities that will be immediately implemented which involve AES include:

- an increase in the number of weather observations from federal vessels;
- co-ordination of fisheries openings/closings including the salmon fishery;
- increased research into the causes of severe Pacific storms;
- exchange of weather observations directly with the fishing fleet;
- the establishment of a marine weather forecast position at the Pacific Weather Centre;
- the introduction of a wave forecast service;
- improvements to the communications systems between governments;
- an increase in the number of automatic weather reporting stations; and
- the deployment of offshore moored weather buoys.

The remaining nine recommendations are under active consideration with respect to methods to implement them, their cost, and the means by which they will be funded. AES has had to commit approximately $1 million from its 1985/86 budget to implement the actions which have been committed so far.

AES co-operates extensively with the Departments of Transport (aviation) and National Defence to provide basic meteorological services for aviation and military purposes. A number of working arrangements have been developed to maximize efficiency and to meet user needs. These arrangements are specified in Memoranda of Understanding between AES and the two departments, with cost-recovery, and PY secondments worked out to the general satisfaction of all parties (e.g., 113 PYs seconded to DND for military applications).

The program presently recovers costs of about $15 million annually, mostly from other government departments. A thorough review is underway to develop specific plans for greater cost-recovery to meet the recent directives of the new government. It was observed that many of the more promising areas for potential cost-recovery are also the areas with the greatest potential for privatization or private sector development.

The increasing interest and activity of US private sector meteorological consulting and information services in the Canadian market has been a matter of some concern. AES is not able to service the myriad of local interests and demands for specialized services, yet AES managers interviewed appear to lack confidence in the ability of Canadian meteorological companies to compete with U.S. firms and Canadian subsidiaries of U.S. firms.

Approximately 40 telephone calls were made by the DOE/Self-Evaluation Team to private and public sector users of weather services. The responses were generally supportive of AES services although complaints were noted in such areas as:

- service to remote areas;
- accessibility of information (especially computer access);
- desire for greater accuracy of forecasts;
- need for more weather stations;
- not enough business for private sector consulting firms;
- need for more service to offshore development (ice, weather and oceanography); and
- telephone access difficult (too busy).

Through the United Nations' World Meteorological Organization (WMO), Canada, because of its vast geographical extent and relatively sparse data network, has benefited from international data collection and experimentation into scientific techniques for weather prediction. Canada has also benefitted considerably from the American meteorological program, the most notable being the use of data from their weather satellites. For its part, Canada has made significant contributions to numerical weather prediction through its efforts at the Canadian Meteorological Centre, and contributed data to the World Weather Watch, particularly in the Arctic.

## ASSESSMENT

The objective as stated is valid.

Despite some critical remarks made in certain audit reports, AES is generally well-managed and goal-oriented. There are some areas which require further consideration. These areas are dealt with in subsequent comments.

The basic infrastructure required to provide core weather services to clients is sound and generally serves public and private sector needs well. In addition, AES has clearly articulated its longer term goals and strategy for modernization of the infrastructure to realize the benefits of automation and the application of new science and technology. The AES goals and rationale are sound and should be supported, notwithstanding the need for additional capital investment in a time of restraint. By doing so, AES will have a significant opportunity to direct its modernization program toward other federal objectives such as stimulating the Canadian high technology sector and developing Canadian private sector capabilities.

The AES role in providing specialized weather services to weather sensitive economic sectors is the subject of extensive internal policy consideration as well as external consultation. Since AES operates a "single service" and maintains a large infrastructure to do so, it is capable of providing meteorological support to economic sectors such as agriculture and forestry at relatively small incremental costs. Thus the basic responsibilities of AES to provide weather services for the public and for areas under federal responsibility (aviation safety, marine safety, national defence and sovereignty, and international exchange) have allowed AES to be able to meet other needs inexpensively.

The dominant role of AES in meeting Canadian meteorological service needs has probably also been somewhat of an inhibiting factor to the development of private sector meteorology. The Canadian market for specialized weather services has not been and, to some extent, is still not large enough to stimulate a significant private sector response. However, the advances in science and technology in recent decades, combined with increasing public and private sector demands, appear to be creating opportunities for the private sector. A study is currently underway to determine private sector capacity. The much larger U.S. market and thus the larger and more sophisticated private sector capability is creating a dilemma for Canada due to the increasing presence of U.S. firms in the Canadian market. AES must assume a more agressive role in supporting the development of the Canadian private sector, including the development sof specific plans and strategies with defined outputs and deadlines.

Parliamentary approval of AES expenditures requires that revenue target shortfalls come from service A-base resources and this provides a strong incentive to generate revenue, at the expense of supporting the development of non-government sector capability. This is exacerbated by the fact that those options with the highest potential for revenue generation are those that have the highest potential for the non-government sector to assume. AES can provide very low cost services to many specialized weather information markets due to the small incremental cost of using its existing infrastructures.

One area where the need for a greater role by AES may be required is the Canadian North, including the northern parts of some provinces. There does not appear to be adequate analysis of the specific measures required to meet this need, nor of the roles that AES and private sector firms should play. The issue of the level of service in the North requires careful review and consultation with all affected parties.

Complaints were received from some provinces with strong weather service activities about the lack of consultation and co-operation on activities of mutual interests. Clearly defined consultation mechanisms with the provinces would eliminate this irritant.

The adjustment process, within and external to AES, to implement a modernization program, to develop Canadian high technology capabilities and private sector meteorological service capabilities, and to rationalize its existing infrastructure in line with government restraint imperatives, is an issue requiring a high level of interaction and understanding among the affected parties (i.e., the public, industry, politicians and DOE). Past attempts to close weather stations or to modify service levels have not been successful. New approaches are needed. To accomplish the necessary adjustments, AES must have the ability to shift resources to their most beneficial use while at the same time carefully considering public and private sector views.

In the area of communications AES has appeared to do quite well. Access to weather information through the media or through telephone access to AES has evolved in step with new technological developments. Since the delivery of severe weather warnings (e.g., tornadoes, blizzards, etc.), by way of the media, is essential to the effective discharge of the AES mandate as it relates to public safety, there is a need for assurance that these will be broadcast by the media promptly. While it is hard to believe the media would not necessarily do so, such a requirement could be legislated by the CRTC as a condition of licensing.

The delivery of weather services is a dollar-and-people-intensive activity. An increased level of weather services can be provided over the next decade through the appropriate application of advances in meteorological research, remote sensing, computer and communication technologies together with commensurate skills development.

AES automation has resulted in participating Canadian industries moving to the forefront of technology and becoming leaders in the world market. For example, the MDA Corporation of Vancouver is now one of the world's leading satellite receiver equipment manufacturers. Future automation of the AES weather observing and forecast data processing systems represents 800 person-years of work in the Canadian high technology industry during the next decade, and would place more firms in a better position to compete for international markets.

In spite of a number of studies and efforts by AES to develop criteria for deciding upon the appropriate level of core weather services, this fundamentally important issue is not well defined. The Task Force on the Level of Weather Services criteria are useful, but do not offer enough precision to be operationally useful. This issue is important to resolve since the automation and modernization of the core infrastructure is expected to result in person-year savings which AES would like to re-allocate to provide specialized weather services to economic sectors (e.g., agriculture). The study team does not agree that this should happen automatically.

## OPTIONS

Therefore, the study team recommends to the Task Force that the government consider the following:

a. With regard to Level of Service:

  - establish within six months, in consultation with government and non-government sector interests, specific criteria for determining the level of core services which should be provided by AES;

- for those services not destined for the public generally, other departments be responsible for identifying the needs and obtaining the resources. (This is also the conclusion of the study team on the Level of Weather Services.) AES should be responsible for performing the service on a full cost-recovery basis where no viable private sector source exists or has reasonable prospects for development. This recommendation includes consideration of cost-recovery from those departments serving a constituency currently receiving specialized AES support (e.g., DOT marine, Agriculture, Forestry). These departments should be responsible for any cost-recovery from the clients being served; and
- for specialized and enhanced services which are provided to the public on a request basis and for which no private sector capability exists, AES should undertake full cost recovery. (AES is currently undertaking a review of such services and their costs.)

b. Initiate immediately a comprehensive review of service in the North in consultation with government and non-government sector interests, and report back to the government within six months with recommendations on what level of service should be provided.

c. Develop immediately formal consultation mechanisms with interested provinces for the establishment and undertaking of activities of mutual interest.

d. Proceed with plans for automation and modernization, to be fully implemented by the mid-1990s, to provide a modern weather service appropriate to need. This should be planned with maximum development and participation of the Canadian high technology industry. Savings in resources should not be automatically redirected internally. Full implementation would result in a reduction of 60 person-years.

e. With regard to revenue generation and private sector development:

   - to eliminate the conflicting goals of revenue generation and private sector development, targets be developed for revenue generation that allow for explicit trade-offs to be made between these targets and the need for AES to relinquish promising revenue generation opportunities where private sector development is possible; and
   - that AES undertake immediately the development of a specific plan and strategy with defined outputs and deadlines to encourage the development of the Canadian private sector to provide specialized weather services.

f. As a matter of priority amend the legislation governing the CRTC to require immediate broadcasting of severe weather warnings issued by AES as a condition of issuance of licences.

g. Proceed with previously identified cost-saving measures to close the weather office in North Bay and to reduce the program at Gander through the transfer of the weather centre to St. John's. Future closures that do not affect the effective level of service should also be supported.

# ICE SERVICES PROGRAM

## OBJECTIVES

To provide regional scale ice information and advice for the safety of Canadians, the security of their property, the support of economic activities and the protection of the environment.

To provide to the Canadian Coast Guard the detailed ice information and advice which it requires to ensure the safety and efficiency of marine transportation operating in ice infested waters.

## AUTHORITY

Key: Government Organization Act (1979) Section 6 (1)(a)

## DESCRIPTION

The activities of Ice Services include: conducting ice reconnaissance by using leased aircraft and a new extended range DASH-7, ship and shore stations and satellites; providing up-to-date ice information and forecasts for use by the shipping, fishing and offshore resource development industries for Canada's major rivers, lakes, and Arctic and adjacent coastal waters; and maintaining an ice climatological archive for use in design and planning of any ice-sensitive activity (e.g., Arctic and offshore development). Ice forecasting is closely linked to and shares in the infrastructure for the Weather Services program; (e.g., the communications network, computer services, training, etc.).

The Ice Services Program provides ice information and ice forecasts to various user groups through the production of 3,000 ice analysis charts, 30 seasonal long-range ice forecasts, and responds to specific inquiries as well. Also, responses are provided to approximately 2,500 inquiries for ice forecasts and 1,500 inquiries for ice climatological information. About $20,000 is cost-recovered through the sale of ice charts. Increased revenue generation is currently under review.

To support this activity, Environment Canada undertakes research to develop techniques for improved remote sensing of ice and for improved ice forecasting methods. Resources for ice research are provided from in-house resources and outside sources such as other federal government research and development programs, e.g., Energy R&D, Arctic R&D, Canadian Coast Guard, etc.

The program is being expanded to provide, by 1987/88, detailed iceberg surveillance and expanded Arctic services in support of the East Coast and Arctic offshore oil and gas developments. An extended range DASH-7 aircraft (Dept. of Transport ownership) and new equipment for improved surveillance and communications will support these new services. Increased operating costs and new capital costs are reflected in the 1985/86 projected expenditures.

A large portion (61.6 per cent in 1984/85) of the program is cost recovered, the major proportion from the Canadian Coast Guard for support of surveillance activities.

**PROJECTED EXPENDITURES (000s of dollars)**

| | **1984/85** | **1985/86** | **1986/87** | **1987/88** |
|---|---|---|---|---|
| Salaries | 2,969 | 3,138 | 3,138 | 3,138 |
| O&M | 17,489 | 21,744 | 21,527 | 21,881 |
| Grants and Contributions | 218 | 218 | 218 | 218 |
| Capital | 2,548 | 4,042 | 3,513 | 3,042 |
| **TOTAL COSTS** | 23,224 | 29,142 | 28,396 | 28,279 |
| Revenue | 14,301 | 15,658 | 15,658 | 15,658 |
| Person-Years | 64 | 66 | 66 | 66 |

**BENEFICIARIES**

The principal stakeholders/beneficiaries of the ice services program are located in the Arctic, the East Coast and the Great Lakes. They include:

Canadian Coast Guard - for safe operation in the marine transportation industry

Canada Oil & Gas Lands Administration - for establishing environmental protection requirements for the offshore resource development industry

St. Lawrence Seaway Authority - optimization of seaway shipping season

Offshore Resource Industry - optimization of operation of drilling rigs

Marine Industry - less damage to ships

Fishing Industry - optimization of fishing operations

Canadian Industry - through commercialization of equipment developed under co-operative research projects

International Community - bilateral agreements exist between Canada, the United States and Denmark on exchange of ice information

The presence of ice surveillance flights supports Canadian sovereignty claims on the East Coast and in the Arctic.

Other private sector benefits include aircraft leasing for ice surveillance and the consulting industry who use ice data to provide specialized services to clients.

The marine shipping policy is to maintain marine transportation, to the extent possible, in the Lower St. Lawrence River and Gulf of St. Lawrence throughout the year. The provision of ice services optimizes the implementation of the policy and the resultant economic spin-off through cost avoidance such as decreased damage to ships, lower insurance costs, etc., has been estimated at $230 million (1984/85) (Price-Waterhouse Study, 1982).

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

Program Review in 1982 of Marine Weather and Ice programs. The review identified adaptation to change as the major problem facing AES, e.g., increased services in support of northern and offshore resource developments.

Treasury Board review of privatization of the ice services program in 1981 concluded that a need existed for strong centralized control with a high level of private sector involvement through contracts.

## OBSERVATIONS

The objective as stated is very broad and does not make reference to the basic service level which should be provided from the federal tax base.

There is a high level of cost recovery, principally for ice reconnaissance from the Canadian Coast Guard which does not in turn recover costs directly from beneficiaries. Aircraft flying time which is purchased from the private sector is the major cost of surveillance (58 million dollars for the five year period 1982 - 1987).

The implementation of new technologies for surveillance and communication will greatly enhance the preparation and dissemination of future forecasts. Already, with the increased use of satellite data, the requirements of airborne surveillance have been reduced from 4,000 to 2,200 hours and the preparation and dissemination of information reduced from 40 to 24-16 hours. The objective is to provide information within six hours of receipt of data.

The development of the Arctic resources has created an increased demand for more complete regional surveillance coverage in the North.

All research ($532,000) is mission-oriented and the majority is contracted out to private consultants who undertake field studies and management of projects e.g., development of operational imaging airborne microwave radiometer system. Research funds are provided from the AES budget and from outside sources (Canadian Coast Guard).

## ASSESSMENT

On the basis of discussions with those who were contacted we are satisfied that the Ice Services Program is a well-accepted and well-managed program with proven expertise, which maintains a good relationship with its stakeholders.

There is an existing and rapidly expanding private sector capability to provide specialized ice services to clients (major clients are the offshore resource development industry). The Ice Services Branch actively directs site-specific work to the private sector and restricts itself to providing regional ice forecasts. The private sector consultants and user-clients feel that the delineation of responsibilities is appropriate. There is a good exchange of data to mutually enhance each others capability. We feel this is an appropriate delineation of responsibilities between the public and private sectors.

There is a high level of cost-recovery in the program. Canadian Coast Guard provides virtually all of the revenue (14.3 million dollars in 1984/85) received. Other agencies such as Canada Oil and Gas Lands Administration (COGLA) and the Department of Fisheries and Oceans (DFO) do not provide support. More cost-recovery from those agencies with specific regulatory responsibilities and which represent specific interests could be pursued.

## OPTIONS

Therefore, the study team recommends to the Task Force that the government consider continuing the present program at the current level, which includes improvements in sensing activities and in communications. A study should be conducted to establish the regional scale ice information which AES should provide. Client agencies and clients should provide resources for additional services to serve their interests such as now provided by CCG. The practice of directing local and specialized ice services activities to the private sector and the development of an integrated and complementary ice services program should be continued.

# AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH

## OBJECTIVES

To establish and/or update the scientific knowledge base on atmospheric processes and atmospheric chemistry and infrastructure to allow the Canadian Government to respond, in a timely manner, to regional, national, and global air quality related issues, and to co-ordinate national research on Long Range Transport of Atmospheric Pollutants.

## AUTHORITY

Key: Government Organization Act (1979)
Weather Modification Information Act (1974)

## DESCRIPTION

It should be noted that this program does not include all of the Atmospheric Environment Service (AES) research activities. The meteorological services research program carried out in support of weather, ice and sea-state observation and forecasting is part of the Weather Services program in the Department of the Environment (DOE). Similarly, climate and ice research activities are part of the climate and ice services programs in DOE.

The Air Quality Services and Atmospheric Research program is mission-oriented research and development to advance the level of knowledge and understanding of the physical and chemical processes of the atmosphere and its constituents so as to address the scientific aspects of environmental issues on a sound basis.

The information and scientific knowledge gained through this program assist government policy-makers in identifying, understanding and monitoring emerging environmental issues, and in developing remedial or preventative measures which include the negotiation of federal/provincial and/or international agreements. The priority environmental issues to which this program contributes include:

Long Range Transport of Atmospheric Pollutants (LRTAP)
Acid Rain
Ozone layer
Toxic chemicals
Renewable energy
Climate change

The operations of the Air Quality Services and Atmospheric Research are carried out through two branches:

> Atmospheric Processes Research Branch: this branch carries out research on the composition and processes in the upper atmosphere (including impact questions such as changes in the ozone layer), cloud physics and weather modification, and atmospheric radiation and solar energy.
>
> Air Quality and Inter-Environmental Research Branch: this branch is concerned with: characterizing the chemical and physical parameters of the atmosphere near the ground as they affect the air-water-ice-land interfaces; the dispersion, transformation and deposition of atmospheric pollutants over short and long distances; their interactions with the hydrosphere and biosphere; the development of air quality criteria and national ambient air quality objectives. Many of the activities are done in close co-operation with the provinces, e.g., the Federal/Provincial Research and Monitoring Committee of LRTAP, and with international co-operation.

Most of the information obtained from research and development is disseminated through scientific papers and reports, scientific conferences and workshops, and departmental publications. Being mission-oriented, some of the research and development have resulted in the development of new atmospheric process instruments which have been commercialized by Canadian industry. A recent development was a sunphotometer which was used by Astronaut Marc Garneau to make measurements of the ozone layer from the space shuttle.

Funding for the program is largely from the DOE budget but includes some resources provided from the energy, space and LRTAP programs.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | 5,557 | 6,453 | 6,453 | 6,453 |
| O&M | 3,375 | 5,457 | 5,403 | 5,241 |
| Grants | 142 | 273 | 369 | 341 |
| Capital | 2,529 | 2,920 | 2,919 | 2,919 |
| **TOTAL COSTS** | 11,603 | 15,103 | 15,144 | 14,954 |
| Revenue | 157 | 157 | 157 | 157 |
| Person-years | 111 | 122 | 122 | 122 |

**Note** The 1984/85 figures come from the Main Estimates. Adjustments to the 1984/85 budget made in the Supplementary Estimates to undertake LRTAP research are not reflected. The actual expenditure for 84/85 is closer to the 1985/86 Estimates noted above.

## BENEFICIARIES

Within the department and the federal government the outputs from the program are used in supporting and developing policies on scientific matters, regulatory programs, and air quality criteria. Support is provided to the Canadian federal position in negotiations with the provinces, the United States and other countries in the fight against acid rain (e.g., the establishment of the 20 kg/hectare per annum level for acid deposition). The provinces also benefit from the research and development outputs in the establishment of air quality requirements, from international organizations, such as the World Meteorological Organization, and from the United Nations Environmental Program through the presence of expertise and Canadian research. The private sector benefits through contracting out ($1,620,000) and through commercialization of atmospheric instrumentation developed by AES. Universities benefit through grant support of research ($120,000).

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

A peer review by the Royal Society of Canada found that research done on acid rain and long-range transport of air pollutants under this program was comprehensive, well-conceived and generally well-managed. The quality of research was found to be very good.

**OBSERVATIONS**

The objective is valid and reflects the nature of the work undertaken in this program.

Not all of the AES research activities are included under this program. Meteorological services research (67.4 person-years, $5,570,000), climate research (20.5 person-years, $1,269,800) and ice research (2.0 person-years, $532,000) are not included. The Atmospheric Research Directorate is responsible for the management and direction of meteorological services research in addition to the air quality and atmospheric processes research. The directorate is also responsible for some climate research projects.

Meteorological research in Canada is carried out mainly by AES, the Alberta Research Council and universities. An AES commissioned study (K. Nishmas, McGill University, 1985) identified over $21 million of government funded atmospheric research in 1984/85. AES accounted for $14.1 million with the Air Quality and Atmospheric Research Program being the major contributor ($11.6 million). The study concluded that a need existed for frank and constructive discussion on the volume and quality of atmospheric research currently being done and on what should be done. At one time regular workshops for this purpose were held but these have been discontinued. Several stakeholders commented on their usefulness.

One facet of AES research has been directed towards the development of specialized equipment to support AES requirements for improved weather services. The basic research work is conducted by AES but further developmental work is done under contract to develop the technology for AES use. While the availability of the technology does not always lead to commercialization, there have been some notable successes. Among these successes which have attracted world-wide sales are the Brewer ozone spectrophotometer, an electrolytic hydrogen generator for use at upper air sites, and satellite data reception and processing systems. The federal government has benefited through licensing arrangements as have smaller instrument manufacturing firms through the sale of instruments.

## ASSESSMENT

While acknowledging the expertise available within AES, there were some concerns about this concentration of atmospheric research capability within AES. Concerns were also expressed about the apparent reluctance of AES to acknowledge the presence of outside expertise and to further its development. AES officials commented that the lack of expertise outside government precluded more contracting out. As a result, there is an opportunity to effect measures to improve the situation through personnel exchanges and partnerships with the private sector and through the establishment of centres of excellence at the universities. AES has recognized this as a problem and is initiating steps to stimulate more research at universities and elsewhere outside the federal government. The establishment of industrial chairs at universities in co-operation with the Natural Sciences and Engineering Research Council of Canada (NSERC) and industry will, over the longer term, result in better overall research capability in Canada to address future issues in atmospheric science. Another approach might be to develop exchanges between AES and the university/private sector on a full or part-time basis.

Since 1975, the person-years directed to AES research have remained relatively stable. On the other hand, the amount of contracted work has increased from $0.51 million to over $2 million in 1983/84. Much of this increase addresses new issues such as acid rain and toxic chemicals and manages atmospheric research projects with funding provided by other departmental programs such as Arctic Marine Transportation, Energy R&D and space. The management of outside contracts creates a demand on in-house resources at the expense of in-house research. AES uses a guide of one person-year to manage $200,000 of contract work. Discussions with NRC officials revealed they average about $500,000 of research contract management per person. NSERC, in administering their grant program, averages about 3 per cent of total grant funds. While the comparisons may not be completely valid, it would appear that a larger amount of contracts could be managed on a per person basis.

Much of the research is applied and mission-oriented towards the problems and issues of the day. There is a need to continue basic research into future issues, problems and policies. We cannot dictate what amount this should be, but a reasonable target would be about 10 per cent.

As noted in the program description, the research and development program in AES results in the generation of many scientific papers and reports. Some stakeholders outside the research community indicated they were not aware of many of these publications and questioned why they were not more widely publicized since they were also of interest to industry.

There were some complaints that instrument development research done by AES includes the prototype developmental work which could be undertaken by the private sector. Clear guidelines should be developed so that the maximum amount of developmental work can be directed outside government.

The program's contract expenditures are highly concentrated (79 per cent) in Ontario. Some complaints were voiced about the reluctance to undertake projects in the West. Although extra costs will be involved these regional problems must be addressed. Mechanisms such as establishment of a small regional research office or the use of regional weather office staff for research management should be considered.

Inputs for establishing research priorities on specific areas come from many sources. Committees such as the Cloud Physics Advisory Committee, Stratospheric Processes Advisory Committee, Federal Committee Research and Monitoring Co-ordinating Committee of the Long Range Transport of Airborne Pollutants program, etc. provide input. Regional offices and the AES Management Committee provide input through the operational and work planning process. However, there is no formal mechanism by which outside input is brought to bear on the establishment of overall research priorities.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The changes that are already being made in this program be supported as they address the need to develop research capability and expertise outside the federal government. A plan of action should be developed to effect this by March 31, 1986.

b. AES ensure that contract dollars provided from outside sources include adequate provision of person-year support for contract management. AES should also review the appropriateness of its current guide on the level of support required for contract management by March 31, 1986.

c. AES take steps immediately to effect a better regional distribution of its research and its contract activities.

d. AES immediately improve the ways it publicizes the results of its research activities to interested parties outside the peer group.

## CLIMATE SERVICES

### OBJECTIVE

To provide climatological information, forecasts and advice in support of Canadian socio-economic activities.

### AUTHORITY

Key: Government Organization Act (1979), Part III

### DESCRIPTION

The Canadian national climate archive, which is operated and managed by Environment Canada, contains climate weather records from 10,000 Canadian locations of which 2500 are currently active. Canadian locations dating back to 1840 are now accumulating over 4 million new weather observations every year from 2,400 voluntary observers, 280 federally run sites and through data contracts with provinces which operate their own climate networks.

Annually, the Climate Services program provides climate data, studies and advice in the form of 200 study reports, responses to 200,000 inquiries and data publications for 2,500 Canadian locations. The data are used by interested parties to make technical, safety and socio-economic decisions. Data analyses which provide information, such as means and extremes of rainfall or snowfall, unusual events, average maximum and minimum temperatures, trends, etc. Specialized consultations are also provided in support of water resources, forestry, agriculture and other general areas of public concern. An increasing demand is through the courts where subpoenas are used to have climate information presented for a specific day. Support is provided to federal activities such as the Environmental Assessment and Review Process (EARP). Services are provided through the Canadian Climate Centre and regional weather offices of AES.

In 1984, the Canadian Climate Program was approved by Cabinet. The resources for this program are reflected in the Program Expenditures table. The program provides for an integration of climate-related activities in other federal departments, the provinces and Canadian universities. The first phase of the program involves: the development of monthly and seasonal predictions of temperature and precipitation by 1985 (which has been initiated); year-ahead predictions of such variations by 1995; preliminary predictions of the effect of increasing atmospheric $CO_2$ on Canada's climate by 1985 (which have been completed); and definitive predictions by 1995. The program is managed by a hierarchical structure comprised of a Climate Planning Board, a Climate Advisory Committee and Regional Climate Advisory Committees. The foregoing include representation from federal and provincial agencies, the university community and the private sector.

Research is undertaken: to understand the effects of increasing atmospheric constituents, such as carbon dioxide, on future climate; to advance the understanding of the effects of man on climate and the impact of climate on human activities, the economy and the environment; to develop the capability to predict climate on a monthly, seasonal and annual basis; and to provide a prediction service to satisfy the safety, socio-economic and planning needs of Canadians. In 1984/85, $160,000 of research activity was contracted-out.

Funding for this program is provided through the budget of Environment Canada. There is some cost recovery (about $50K/yr) through the sale of publications and from consultations. Increased revenue generation is currently under review.

**PROJECTED EXPENDITURES (000s of dollars)**

| | **1984/85** | **1985/86** | **1986/87** | **1987/88** |
|---|---|---|---|---|
| Salaries | 9,188 | 10,088 | 10,088 | 10,088 |
| O&M | 4,950 | 5,190 | 5,190 | 5,190 |
| Grants | 137 | 172 | 172 | 172 |
| Capital | 730 | 930 | 911 | 910 |
| **TOTAL COSTS** | 15,005 | 16,380 | 16,361 | 16,360 |
| Revenue | 50 | 50+ | 50+ | 50+ |
| Person-years* | 225 | 235 | 235 | 235 |

* The person-year breakdown is as follows:

| | |
|---|---|
| Canadian Climate Centre | 116 |
| Central Services Directorate | 47 |
| Field Services Directorate | 62 |

The increase in 1985/86 is due to the Canadian Climate Program and the National Hydrology Research Institute in Saskatoon.

## BENEFICIARIES

The climate data base and specially analyzed data are used in decision-making in many segments of the Canadian economy, e.g.:

| | |
|---|---|
| Agriculture | The Canadian Wheat Board uses the data for long-term forecasts and marketing strategies since production and selling capability depend on drought levels elsewhere in the world. |
| Construction | National Research Council includes climate data in the National Building Code so wind stresses, snow levels etc. can be calculated in all areas of the country. |
| Water | Consultants, municipalities and provinces use the data and analyses for planning and design purposes. |
| Climate Consultants | Private consultants provide interpretation and analyses of the data for specific applications. |
| Offshore Resources Development | Climate data are used for safe and efficient design of offshore rigs, moorings etc. |
| Oceanography | Long and short-term ocean climate to forecast future fish species and abundancy. |
| Environmental Quality | Applied climatology is used in preparation of environmental impact statements. |

Advisory services which are provided at a nominal rate of 24 dollars per hour (established by Treasury Board) are used by many interested groups and have resulted in some quantifiable benefits, e.g., a saving of $20,000-30,000 per microwave tower at 20 tower sites in Alberta as a result of detailed analysis and specialized forensic climatological information.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

Operational Audit, Canadian Climate Centre, 1981. The Operational Audit revealed that program delivery is effective but that activities could be better organized. The audit also recommended increasing provincial and private sector involvement in the Canadian Climate Program. This latter recommendation has been addressed above.

## OBSERVATION

The objective does not make direct reference to the safety benefits of climate information e.g., the use of snowfall data for proper design of roof structures, wind data for construction of buildings and towers, etc.

## ASSESSMENT

The climate data base is needed and used by a wide sector of the Canadian public in the planning and design of programs, projects, marketing strategies, etc. for social, safety and economic benefits.

A portion of the applications capability within the climate services program to provide advice and consultations to interested parties could be provided by the private sector. A number of consultants already exist and further developments in this area could provide the potential for export of this expertise. There will, however, be a need for some level of in-house expertise in the area, and this will have to be determined.

The information reviewed provided many examples of the perceived benefits of climate services leaving the impression of a very favourable cost-benefit ratio. However, few concrete examples of cost-benefit analyses were identified. There would appear to be considerable potential for quantifying cost-benefit ratios, but analyses to do this have not been promoted to date. The promotion and marketing and resultant use of climate data can result in significant benefits to Canadian society.

Since AES is the generator of the data, it organizes and analyzes the data to serve specific interests. This is currently done at little or no cost to the user, although revenue generation is currently under review and is expected to be implemented.

The development of long-term forecasts (monthly, seasonal, yearly), which will be useful and utilized is an admirable goal. This is an activity with uncertain results but one with potentially large benefits. It will, however, take time to develop the reliability of such forecasts.

**OPTIONS**

The study team recommends to the Task Force that the government consider the following measures:

a. The climate data archive in AES be retained with at least minimal analysis capability. Data retrieval and dissemination costs should be recovered to the extent possible.

b. The climate research activities related to long-term issues, such as the impact of $CO_2$ increase, be retained at the current level of activity; and that studies be initiated to identify and assess new institutional arrangements that would enable the climate research activity to be transferred to a university or universities in a centre-of-excellence system, while retaining a capacity for the federal government to direct and fund activities required to meet its ends.

c. The devolvement of some or all of the application activities to the private sector be explored in a planned manner and within a specified timeframe. Among the activities which should be included in considering devolvement are:

   - identification of the core activities which should be undertaken as part of the climate services program e.g., data collection, storage, verification and quality control; data analyses and summarizing; long range forecasting studies;
   - identification of the level, potential capability and type of activities which could be assumed by the private sector;
   - determining the realistic data service costs to external users;
   - considering the regional impacts of privatization; and
   - encouragement of the development of the private sector by contracting-out.

## PROGRAMS FOR SUSTAINING A HEALTHFUL ENVIRONMENT

### Background

The Department's overall effort in sustaining a healthful environment is carried out through the Long Range Transport of Airborne Pollutants (LRTAP), Toxic Chemicals Management, Commercial Chemicals, Technical Services, Industrial and Waste Management Programs.

The general objective of these programs is summarized as follows:

> "To prevent, eliminate or reduce the release of pollutants into the environment which would cause harm to human health and/or ecosystems and which would have adverse social and economic consequences."

This objective is derived from legislation developed expressly for these programs or that existed for other government departments and agencies. This legislation involves (a) the creation of emission control guidelines and/or standards developed for site specific situations, protection of specific fauna species, classes of industry, or more general broad areas of the environment; (b) the development of regulations, enforced at the point of entry by either federal staff in the regions or by the provinces, depending upon jurisdictions or arrangements involved; (c) the elimination of waste generation; and (d) the provision of information.

In support of these central thrusts the programs depend upon an extensive bank of scientific and technical knowledge existing in federal and provincial government departments and in non-government sectors both nationally and internationally. This science is comprised of basic research, technology development, monitoring and evaluation.

The broad nature of this objective is such that the jurisdictional interface is extensive between and among the Department of the Environment and other federal government departments (OGDs) and agencies, and provincial and municipal levels of government as well as the United States on bilateral issues. Often, achievement of objectives is dependent upon jointly shared responsibilities with OGDs or through authorities residing in OGDs. As well, the impact of the programs demands the involvement of the other concerned stakeholders -- industry; labour; and Environmental Non-governmental Organizations (ENGOs) -- in both the definition of the problem and in the development of solutions to these problems.

During 1984/85 $63,119,000 and 811 PYs were expended by DOE in pursuit of this objective. The 1985/86 Main Estimates indicate that $56,672,000 and 770 PYs will be spent. This represents a decrease of $6,447,000 and 41 PYs to be spent in this area of significant social demand. Of these resources, some 42 per cent of the dollars and 45 per cent of PYs are expended at the regional level.

The numerous interfaces that exist among DOE, other federal government departments and agencies, and the provinces and territories have associated resource implications. For example, 24 federal departments and all provinces are involved in the Toxic Chemicals Management Program and together spend some $143 million annually on research and monitoring alone.

**Summary Assessment and Key Directions**

The review of these programs identified both a need and strong support for them. It also identified a need for an organizational entity at the federal level to integrate the delivery of the programs and provide leadership in sustaining a healthful environment for Canada. This review indicated that there has been significant change over the life of these programs in terms of both the issues being addressed or requiring attention and the delivery systems employed.

Today's issues are broader and all-encompassing in terms of complexity and stakeholders involved. Definition and resolution are complex and more sensitive to conflicting objectives. In the past, problems appeared more straightforward and lent themselves to arbitrary and quick resolution, as with the establishing of regulations and prescribing treatment (higher stacks, primary water treatment, etc.) and then policing for compliance.

Over the past five to seven years the complexity and interaction of issues have become recognized as has the need for increased understanding of the nature and extent of impacts. This period has also seen an increasing capability, capacity and willingness within the provinces to assume a greater responsibility for environmental matters within their jurisdiction. With the emerging threat of chemicals which not only have positive societal benefits but also negative environmental and health concerns, the federal government, with the support and input from the provinces, industry and the public, has a very important leadership role to play.

The Acid Rain and Chemicals Management Programs involve many sectors (government, industry, labour and public interest groups). This emphasizes the need to improve the ability to manage programs horizontally. The new challenge is to involve all concerned sectors in a consensus-seeking dialogue wherein many factors are considered in order to arrive at sound solutions.

This changing situation has resulted in successive organizational restructuring, both minor and major, which has had the effect of introducing a degree of overlap/duplication of effort within the organization and requiring increased internal co-ordinating mechanisms to be established.

In looking at the objectives for each of the programs under review we find that each program has a similar objective and that these objectives should be the objective of the environmental protection function.

Each of these programs makes specific and significant contribution towards the overall organization objectives - but these specific contributions are not clearly identified and should be identified specifically in their objective statements.

The emerging imperatives are to:

a. reaffirm the intentions of the government in sustaining a healthy environment and indicate how these intentions are to be administratively achieved;

b. develop federal management mechanisms that will be the vehicles through which overall management direction, focus, integration of effort and commitment of resources can be achieved;

c. work towards developing more effective working relationships and the clarification of federal/provincial roles and responsibilities in environmental management to eliminate jurisdictional conflicts and/or duplication of effort; and to jointly communicate these relationships to the public;

d. influence scientific effort so as to focus effort from all jurisdictions on the key priority issues and to subject decisions to intraprogram and external review and assessment; and

e. develop a more open approach to communication with the public and with the stakeholders in terms of data sharing, joint priority setting and solution development through a process of consensus-seeking. Communications should be a process, not an event.

In view of the above, the study team recommends to the Task Force that the government consider the following measures:

### A. Mandate

**Confirm the mandate of those programs concerned with sustaining a healthful environment in Canada and with this confirmation provide an indication of how they should be administratively achieved.**

The primary impediment to effective program planning and execution is lack of clear policy direction from the Government. This government policy direction should address jurisdictional concerns with the provinces, territories and other government departments and acknowledge the changing nature and complexity of environmental issues and the improvements required in delivery systems. This direction should include a declaration that each federal department and agency has environmental protection responsibilities and that departments are publicly accountable for their stewardship.

### B. Management Mechanisms

**Introduce federal management mechanisms necessary to provide the leadership needed to fulfill the mandate, including the creation of a Ministerial Task Force, making administrative arrangements with federal and provincial ministers, creating and monitoring effective committee structures, and carrying out an organizational review.**

Specifically, the government should establish a Task Force of Cabinet Ministers comprised of Ministers responsible for the four core departments (Environment, Health and Welfare, Agriculture, and Fisheries and Oceans) that are concerned with the two major environmental issues: Management of Chemicals and the Long Range Transport of Airborne Pollutants. The Task Force should be chaired by the Minister of the Environment. This working group of Ministers should provide the vehicle through which overall direction, focus, integration of effort and commitment of resources can be achieved.

Develop administrative arrangements with the ministers of the other government departments and agencies and with the responsible provincial and territorial ministers culminating in an official Memorandum of Understanding (MOU) with each participant and confirmed by Cabinet.

The Memorandum of Understanding should clearly indicate respective responsibilities and methods of operation to address and resolve areas of overlap, duplication, desired levels of support and irritants. The specific irritants to be addressed are:

- clarification of the role of the regional offices of the Environmental Protection Service with respect to the provinces' environmental responsibilities;

- regional public consultation meetings in the absence of joint arrangements with the provinces;

- department's public consultation meetings widely considered to be ineffective in that there is no focus for discussion nor are they disciplined. These are seen as events rather than meaningful consultations; and

- advocacy role which, as practised poses a significant irritant to almost all stakeholder sectors, causes confusion with the department's role of honest broker and should be rationalized.

Existing committee structures should continue to deal with issues that cross departmental and other government levels. These provide a valuable role in the planning and implementation of inter- and intra-government initiatives.

Review the organizational delivery component of the programs in light of the renewed mandate and the developed administrative mechanisms indicated above, with particular emphasis on the number and type of co-ordinating bodies required and the role and manning level of the regional offices.

The clarity and focus provided by this renewed mandate and the administrative mechanisms identified above will permit this organizational review to identify areas for organizational enhancement and increased efficiency.

### C. Management Of Scientific Research and Monitoring

> **Programs concerned with sustaining a healthful environment in Canada be based upon sound scientific research and monitoring that is well managed and effective. The department must ensure that the management of science in support of the program be: focussed, demand-driven and professionally reviewed and rationalized to the renewed mandate and objective set out through the management mechanisms described above.**

There exists a profusion of scientific and monitoring effort addressing environmental issues in a multiplicity of federal departments and agencies, provincial and territorial jurisdictions and in other stakeholder sectors. Previous studies such as the Royal Societies Review of LRTAP research have provided significant recommendations on how the management of science and monitoring can be improved in support of the program. These recommendations though directed specifically at LRTAP are equally applicable to the scientific efforts of the other programs concerned with sustaining a healthful environment.

With the renewal of the mandate and the implementation of the appropriate management mechanisms, as related to the management of science, the direction and thrust of the science program should ensure that duplication, overlap, jurisdictional impediments and irritants are minimized, permitting improved value for each research dollar expended to be realized.

> **Develop and maintain in co-operation with other government departments and provinces, a scientific data base and reporting system that indicates the relative progress or trends towards the attainment of specific environmental quality objectives or the degree of change in the quality of the receiving environment.**

Based on the foregoing, ensure that an annual State of the Environment Report is prepared and published.

Analysis and evaluation of monitored data would assist in determining the actual impact or success of mitigating actions in place and in establishing a sound basis from which priorities can be set. An important function will also be to provide an early warning of emerging issues.

**Support of technology development only concern itself with developments that can be clearly identified as implementable in medium term (ten years) and for which a viable alternative generation method is not feasible or where appropriate technology does not exist.**

This will take into account research and technical effort being conducted in other sectors of society ensuring maximum utilization of these efforts while avoiding potential duplication. At the same time it will encourage the non-government sector in joint technology development ventures and permit the department to promote technology development and application in areas where it is required. An example of the latter could be to promote and assist the domestic pollution control industry.

## D. Communications and Consultation

**Adopt a more open approach to public and stakeholder communication and consultation that will encourage and facilitate joint data sharing, issue identification, priority setting and solution development.**

**A strategy for broader public discussion of environmental issues be developed to bring scientific fact to bear on public perception and help the public to distinguish between hazard and risk.**

It is important when conducting communication and consultation activities that the participants and the public are in possession of balanced information and evaluation so as to avoid undue alarm and over-reaction which can cause dilution of effort and attention to priority issues. This can obstruct or impede the resolution or implementation of corrective measures (NIMBY "Not in my backyard" syndrome). The public must understand that presence does not necessarily equate with hazard and equally the scientific community must appreciate that values play a role in the determination of acceptable level of risk.

**Review the department's approach to conveying meaningful information to the various segments of the public in an understandable form. This is basic information covering mandate, objectives, responsibilities, organizations, processes, contact points, issues and jurisdictions.**

A consistent theme among stakeholders interviewed was a lack of understanding and knowledge about these programs, their objectives, responsibilites and the delivery structure. Given the breadth of the DOE mandate and the lack of horizontal powers, this task will not be easy but such information will contribute to the development of a strong leadership role for the department.

**The manner and method of funding of public interest groups be re-examined in view of the desired changes to the consultation process and the role of the Department. Funding should be on a broader scale but perhaps not directly from the department.**

The present funding of ENGOs by the department for involvement in specific issues is a mixed blessing. On the one hand, it does not support the unbiased position that is desirable for the organizational delivery system, and creates an irritant with some stakeholders. On the other hand, it provides support for a sector that would not otherwise contribute to the public debate and allows more issues to be brought forward.

## E. Cost Effectiveness

**Contracting-out or innovative joint sharing opportunities be utilized for such things as routine laboratory analysis services.**

The continued provision of departmental laboratory services for routine work is not required and could be performed more cost effectively by other means such as on a contractual basis with the private sector or on a jointly shared basis with other government departments, provincial governments and/or universities. This concept can be applied to regional laboratories and the Ottawa Emissions Laboratory.

**Additional external funding be sought for research work carried out at the Burlington Waste Water Technology Centre.**

This facility has the capability to attract increased non-governmental funding for projects of specific interest, thereby reducing departmental funding requirements.

In addition, focusing of management direction on the programs, reviewing the scientific effort and streamlining the organizational delivery system referred to above will also result in cost effectiveness improvements which, while not quantified by the study team, are considered to be of significant potential.

**Note** Other proposals are identified in individual program profiles.

## TOXIC CHEMICALS MANAGEMENT PROGRAM

### OBJECTIVES

To manage and co-ordinate the federal government's efforts to eliminate or reduce release of chemical pollutants which can harm the environment and cause health, social and economic losses for Canadians; contain or restrict necessary but hazardous chemicals; and facilitate clean-up and/or redress when losses have occurred.

### AUTHORITY

| | |
|---|---|
| Key: | Government Organization Act (1979)<br>Environmental Contaminants Act (1974)<br>Clean Air Act (1971)<br>Ocean Dumping Control Act (1974/75)<br>Fisheries Act (R.S. 1970, c. F-14) |
| Other: | Pest Control Products Act (R.S. 1970, c. P-10)<br>Transportation of Dangerous Goods Act (1980)<br>Canada Shipping Act (R.S. 1970, c. S-9) |

### DESCRIPTION

The Toxic Chemicals Management Program (TCMP) is a multi-departmental program involving some 24 federal departments and equally shared interests by many departments within each province. The federal investment based upon 1981/82 figures is approximately $143 million using 2600 person-years (see Attachment 1) and carried out under some 58 main Acts of Parliament (of which some 22 are shared in responsibility).

Of the federal departments involved, four emerge as a natural focus for toxic chemical activities. Their permanent role is identifiable in terms of resource levels (85 per cent of person-years and 70 per cent of dollars). The four core departments are Environment, Health and Welfare, Agriculture and Fisheries and Oceans.

The problem of the management of chemicals is large and complex, with many facets and jurisdictional issues. There are some 60,000 chemicals in world-wide use with about 1,000 of these manufactured in Canada.

Toxics are defined for this program as "a substance which may through inadvertent exposure, produce adverse, acute and chronic effects in humans, animals or other biota."

Since the end of World War II, a large and increasing number of chemicals have been introduced to society, bringing substantial benefits to individuals and to the world. The chemical industry in Canada is a vital economic force, annually contributing some $11 billion and 50,000 jobs to the economy.

Conversely, chemicals are toxic or can become toxic under certain circumstances, the worst being pervasive and persistent and, though unintended, can have deleterious effects upon a wide variety of human and other biota.

These characteristics dictate the involvement of a wide variety of interests, ranging from manufacturer and user interests, public health safety in transportation and the work place, and waste disposal through to environmental viability as a whole.

The federal government's response to the problems associated with the increasing use of chemicals has been to create an Interdepartmental Committee through which a more integrated approach to the management of toxic chemicals can be achieved.

The Environmental Protection Service (EPS) of the Department of the Environment (DOE) currently chairs the Interdepartmental Committee on Toxic Chemicals (ICTC) which was established by Cabinet. The chairmanship alternates every three years. ICTC is a senior level mechanism for identifying major issues arising in the toxic chemicals area, for developing overall policy and a co-ordinated approach to managing toxic chemical activities with respect to the federal government as a whole, and for providing authoritative advice to ministers on major policy and resource allocation questions. Its mandate is to weld the federal effort into a coherent whole that focuses on and addresses effectively and efficiently chemical issues of high public concern and relevance. Current priorities include drinking water, indoor air quality, dioxins, contaminants in fish and pesticides and a federal policy statement on better management of chemicals. (See Attachment 2 for membership.)

In 1984/85, 454 person-years and $26,463,000 O&M (not including acid rain) in the Department are dedicated to the program to develop and implement actions to resolve issues of high public profile such as dioxins, pesticides, lead, hazardous wastes and drinking water safety, and to monitor the quality of the environment with respect to chemicals and predicting sources of contamination from the life cycle of chemicals. Both activities support interventions (from regulations to advocacy) to improve environmental quality.

A committee of DOE's Assistant Deputy Ministers (Toxic Chemicals Steering Committee (TCSC) chaired by EPS) is responsible for the program planning, policy implementation, evaluation, co-ordination and allocation/management of supplementary resources (TOXFUND).

A federal/provincial committee of ADMs under the auspices of the Canadian Council of Resource and Environment Ministers (CCREM) currently chaired by Quebec, advises Ministers (environment and resource) on policies, strategies and programs for toxic chemicals.

As well, actions are taken by EPS to inform the public and interested groups and to obtain their views on the appropriate trade-offs associated with the risks and benefits of the use of chemicals.

The technical work in support of the program is reflected in other program profiles.

Responsibility for the planning and co-ordination of the work of these Committees rests with the Priority Issues Directorate of EPS with the following budget:

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 1,006 | 723 | 723 | 723 |
| Other O&M | 2,384 | 329 | 341 | 341 |
| Grants and Contributions | 2,188 | -- | -- | -- |
| Capital | 302 | -- | -- | -- |
| **TOTAL** | 5,880 | 1,052 | 1,064 | 1 ,064 |
| Person-Years | 22 | 16 | 16 | 16 |

**Notes** 1. Included in the above is provision for three year funding of $248,000 per year (1984/85) and 4 PY which were allocated to DOE for establishment of a Secretariat for the Interdepartmental Committee on Toxic Chemicals.

2. The dollar and PY reduction between 1984/85 and 1985/86 are due to the discontinuance of the TOXFUND and cancellation of financial support for the Canadian Centre for Toxicology at Guelph.

## BENEFICIARIES

Society in general through the benefits derived from chemicals and through protection from the potential penalties of human health and safety hazards which may be incurred by their misuse.

Labour, industry, provinces, other federal government departments.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

The Treasury Board March 1982 review of federal government activities related to toxic chemicals elaborates in considerable detail the topics covered by this Task Force and provides a valuable resource document for ongoing consideration of this subject.

## OBSERVATIONS/ASSESSMENT

The management of toxic chemicals must rank among the most important issues facing Canadians in both social, economic and environmental terms. We live in a period where the capability to detect chemicals in our environment exceeds our capability to understand their impacts or to develop corrective measures. This creates a personal concern for all Canadians and presents a management challenge in finding a balance between scientific knowledge and the fear of the unknown, and between economic benefit and environmental damage.

The Toxic Chemicals Management Program, while lead by DOE, transcends departmental boundaries. At the same time there is a significant amount of effort within the various Services of DOE. (See Attachment 3.)

While this review will cover the broader aspects of the administration of the program, it could not address the individual projects and the quality of science carried out in other government departments.

The objective appears appropriate but has significant limitations. To manage requires authority commensurate with responsibilities. Since the program has no authority to command or to direct resources or to set priorities for other government departments it can do no more than attempt to co-ordinate their activities to avoid overlap and duplication. In addition there is no recognition of the need to understand and to integrate the actions of the provinces, the industrial sector and other stakeholders, nor of the need for prevention activities versus clean-up and redress.

Other government departments directly involved with the management of toxic chemicals and the ICTC support the concept of co-ordination of the federal effort. They have however identified serious concerns with respect to the mandate of and the authorities which will be exercised by the Committee. These specific concerns are:

a. There is no apparent overall federal government policy direction with regard to the management of toxic chemicals.

b. Priorities and resource allocation rests with individual departments and understandably reflects their own perceptions of priorities on given toxic chemical related problems. (They fear dilution of the resources normally spent in pursuing their mandated responsibilities.)

c. There are currently no supplemental resources available for the Committee to direct as appropriate. There were supplementary funds under the Toxfund which lapsed in 1984/85.

d. The Committee is not seen to be a part of the approvals process on toxic chemical related activities.

e. Environment Canada is seen as a primary stakeholder with its advocacy role. This brings into question its objectivity as honest broker in the Chairman's role. It was seen as promoting the actions of the Department rather than the identified issue.

External stakeholders (interest groups, industries and provinces) indicated a lack of knowledge as to the intent, organization and mandate of the Toxic Chemicals Management Program. Their specific concerns centred around:

a. The absence of a formal or even informal communications process.

b. The lack of information as to desired or actual outputs of the program.

A common concern among stakeholders (both government and management) was the absence of a strategy for broader public discussion in the decision-making process dealing with these issues, including ways to integrate scientific facts with public perception and to distinguish between hazard and risk, leading to a balanced form of public education, avoiding unwarranted alarmism.

The draft prepared by EPS for an ICTC communication plan suggested that one of the objectives would be "through public consultation and debate to build a climate of public opinion which will not only support necessary government interventions but also encourage the industrial sector to attach greater priority to health and environmental considerations in their operations." This statement is indicative of a perceived attitude within DOE that causes concern in a number of sectors (OGDs, provinces, industry). It suggests that only DOE is concerned with, and sensitive to, the health and environmental concerns of Canadians, and that results can only be achieved by "intervention". This type of statement is misleading.

The recent government thrust to give individual ministers and their departments more autonomy works against the effective management of toxic chemicals on a government wide front. It makes even the task of co-ordinating interdepartmental efforts more difficult in that primary departmental mandates and priorities within existing resource constraints will take precedence over any joint efforts.

The past year has seen little in the way of tangible outputs for the following reasons:

No additional funding was available to augment the resources of the departments involved.

There was and still is uncertainty as to the support of government for the toxic chemicals initiative.

Lack of commitment to the program by some departments.

The Committee has identified five priority areas and has assigned leadership roles to the relevant departments in collaboration with other interested departments.

| | |
|---|---|
| Drinking Water Safety | National Health and Welfare |
| Dioxins | Environment |
| Indoor Air Quality | Consumer and Corporate Affairs |
| Pesticides | Agriculture Canada |
| Contaminants and Fisheries | Fisheries and Oceans |

These priority issues were not necessarily arrived at on the basis of proven scientific evidence; none the less they have a public profile and as such deserve attention. Work is already underway on the development of terms of reference, policy frameworks and medium-term work plans.

The scale of the management of the toxic chemicals effort in DOE ($26.5 million and 454 person-years) over several semi-autonomous Services has necessitated the creation of the Department's Toxic Chemicals Steering Committee, discussed above. This appears to be an appropriate approach to co-ordinate the multiple activities of DOE.

Due to the absence of clear policy direction and the inability of ICTC to ensure levels of commitment to priorities it is not possible to assess the adequacy of the overall effort level nor the balance between regulatory and scientific efforts.

**OPTIONS**

The study team recommends to the Task Force that the government consider the following measures:

a. Since the primary impediment to effective program planning and execution is the lack of clear policy direction from the Government, there is a need to seek a clear confirmation of the government's intentions to deal comprehensively with the management of toxic chemicals in Canada. This should be a joint submission involving the four core departments, Environment, Health and Welfare, Agriculture and Fisheries and Oceans.

- This policy statement should reaffirm the intentions of the Government but also indicate how these intentions are to be administratively achieved.

- The importance and magnitude of the issue demands the highest level of authority available. This might well be in the form of a Working Group of Cabinet Ministers concerned with the management of chemicals. Membership of the Group should include as a minimum, Ministers of the four core departments (Environment, Health and Welfare, Agriculture and Fisheries and Oceans) and be lead by the Minister of the Environment. This will provide the vehicle through which overall management direction, focus, integration of effort and commitment of resources can be achieved. Initial funding for this committee should be $5 million to address priority issue areas supplementary to departmental efforts. (Note: This is the same Working Group of Cabinet Ministers referred to in the recommendations for the Long Range Transport of Airborne Pollutants Program (EC-17).)

- The key integrating vehicle for federal activities should be the Interdepartmental Committee on Toxic Chemicals (ICTC), but its mandate, responsibilities and authorities should be precisely defined as part of the government's policy statement.

b. The workings of the ICTC be based upon sound scientific research, participative solution development and implementation, and effective communications.

  - Mechanisms for intra-program and external review and assessment of scientific research should be strengthened to ensure high quality of research and better co-ordination of effort.

  - The Royal Society should be asked to review and assess the science program in support of the Toxic Chemicals Management Program.

- The need for an overall co-ordinated federal approach is undisputed. There is at the same time a complementary requirement for the federal effort to fully engage all other stakeholders in the problem identification and solution development aspects of toxic chemcials management. Various forms and mechanisms can be employed to achieve this goal and this should be a priority effort by each affected department.

c. The program adopt, through the affected departments, a more open approach to communication with the public and with the stakeholders in terms of data sharing, joint priority setting and solution development through consensus seeking. The benefits of this approach will be greater commitment by participants and more effective and efficient achievement of objectives.

d. A strategy for broader public discussion on these issues be developed by ICTC to include: a way to bring scientific facts to bear on public perception; the distinction between hazards and risk, and to ensure a more balanced presentation of the concepts of risk assessment and risk management.

e. A comprehensive audit of this program be carried out by the Auditor General of Canada within five years following implementation.

## ATTACHMENT 1
## Total Federal Government Resources Related to Toxic Chemical Activities (Fiscal Year 1981/82)

| Department/Agency | PY | $Million |
|---|---|---|
| Environment Canada **** | 755 | 37.1 |
| Health & Welfare Canada | 424 | 17.2 |
| Atomic Energy of Canada Limited | 392 | 21.6 |
| Agriculture Canada | 305 | 10.2 |
| Fisheries & Oceans | 230 | 11.4 |
| Atomic Energy Control Board | 208 | 13.8 |
| Energy, Mines & Resources Canada | 78 | 7.5 |
| Northern Pipeline Agency | 62 | 4.8 |
| Transport Canada | 54 | 3.1 |
| National Research Council Canada | 39 | 3.0 |
| International Joint Commission | 15 | 0.8 |
| Public Works Canada * | 10 | 2.4 |
| Labour Canada | 10 | 0.46 |
| Consumer & Corporate Affairs Canada | 10 | 0.46 |
| Industry, Trade & Commerce | 7 | 0.80 |
| Customs & Excise | 6 | 0.13 |
| Indian & Northern Affairs | 5 | 0.27 |
| National Energy Board | 4 | 0.18 |
| Justice Canada | 3 | 0.25 |
| Canadian Centre for Occupational Health & Safety | 3 | 0.20 |
| Statistics Canada | 2 | 0.50 |
| Natural Sciences & Engineering Research Council | - | 4.6 |
| Supply & Services ** | - | 2.3 |
| Medical Research Council | - | 0.11 |
| **TOTAL** *** | 2,622 | 143.1 |

* This includes some short term programs (e.g., Asbestos) but seems representative.

** Reports only half calendar year. Previous year's estimate suggests activity in excess of $3 million.

*** Agencies reporting no person-years are contracting or granting agencies.

**** Includes acid rain.

## ATTACHMENT 2

## Toxic Chemicals Management Program
## Interdepartmental Committee on Toxic Chemicals
## List of Members and Observers

Member Departments

Department of the Environment
Department of National Health and Welfare
Department of Agriculture
Department of Fisheries and Oceans
Department of Consumer and Corporate Affairs
Department of Regional Industrial Expansion
Department of Labour
National Research Council
Department of Transport
Department of Indian Affairs and Northern Development
Department of External Affairs

Observer Departments/Agencies

Privy Council Office
Ministry of State for Science and Technology
Federal-Provincial Relations Office
Treasury Board
Department of Justice
Science Council of Canada
Department of National Defence

## ATTACHMENT 3

### A-Base Resources by Departments/Services ($000, PY)

| Service/Department | 84/85 | | 85/86 | | 86/87 | | 87/88 | | 88/89 | | 89/90 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AES/EC | 1642 | 32.0 | 1642 | 32.0 | 1642 | 32.0 | 1642 | 32.0 | 1642 | 32.0 | 1642 | 32.0 |
| ECS/EC | 1812 | 40.3 | 1812 | 40.3 | 1812 | 40.3 | 1812 | 40.3 | 1812 | 40.3 | 1812 | 40.3 |
| EPS/EC | 2043 | 32.5 | 2118 | 32.5 | 2168 | 32.5 | 2168 | 32.5 | 2168 | 32.5 | 2168 | 32.5 |
| ID/EC | 40 | 1.0 | 40 | 1.0 | 40 | 1.0 | 40 | 1.0 | 40 | 1.0 | 40 | 1.0 |
| EC TOTAL | 5537 | 105.8 | 5612 | 105.8 | 5662 | 105.8 | 5662 | 105.8 | 5662 | 105.8 | 5662 | 105.8 |
| DFO | 1495 | 37.5 | 1495 | 37.5 | 1495 | 37.5 | 1495 | 37.5 | 1495 | 37.5 | 1495 | 37.5 |
| CFS | 1770 | 29.0 | 1770 | 29.0 | 1770 | 29.0 | 1770 | 29.0 | 1770 | 29.0 | 1770 | 29.0 |
| AC | 100 | 2.0 | 100 | 2.0 | 100 | 2.0 | 100 | 2.0 | 100 | 2.0 | 100 | 2.0 |
| EMR | 15 | .5 | 15 | .5 | 15 | .5 | 15 | .5 | 15 | .5 | 15 | .5 |
| HWC | 506 | 10.0 | 350 | 3.0 | 350 | 3.0 | 390 | 4.0 | 450 | 5.0 | 490 | 6.0 |
| NRC | 55 | 1.0 | 25 | .5 | 25 | .5 | 25 | .5 | 25 | .5 | 25 | .5 |
| TOTAL | 9478 | 185.8 | 9367 | 178.3 | 9417 | 178.3 | 9457 | 179.3 | 9517 | 180.3 | 9557 | 181.3 |

## LONG RANGE TRANSPORT OF AIRBORNE POLLUTANTS PROGRAM

### OBJECTIVE

To eliminate or reduce releases of airborne pollutants which cause damage to the environment or human health where these pollutants have been transported long distances from their sources.

**Note** For purposes of this program the term "long distances" applies to pollutants not locally produced or that are non-ambient as defined in the Ambient Air Quality Standards.

### AUTHORITY

Key: Government Organization Act (1979)
Clean Air Act (1971)

### DESCRIPTION

The LRTAP program is a co-ordinated, multi-departmental program focusing on acid rain ($SO_2$ and $NO_x$), photochemical oxidants ($NO_x$ and volatile organic compounds), and heavy metals/persistent organic compounds. The program is comprised of three major components:

- scientific research and monitoring;
- solution development and implementation; and
- communications.

The LRTAP program involves 12 federal departments and agencies (Attachment 1), the provincial governments and the NWT. Overall responsibility for the LRTAP program has been delegated to the Minister of the Environment and a Federal/Provincial Ministers Management Board has been created to co-ordinate the Canadian LRTAP program and policy. The Board is co-chaired by the federal Minister of the Environment and the Ontario Minister of Environment.

To support the Ministers Management Board, the LRTAP program is directed at the officials level through two federal/provincial committees (Attachment 2):

a. The Federal/Provincial LRTAP Steering Committee (FPLSC) which is responsible for the planning and development of the Canadian abatement program, co-chaired by the Assistant Deputy Minister of the Environmental Protection Service, Department of the Environment (DOE) and the Assistant Deputy Minister, Ontario Ministry of the Environment.

b. The Federal/Provincial Research and Monitoring Co-ordinating Committee (RMCC) which is responsible for co-ordinating the Canadian scientific and monitoring activities of nine federal departments/agencies and all provinces. This committee is co-chaired by the Assistant Deputy Minister, Atmospheric Environment Service, DOE and the Assistant Deputy Minister, Ontario Ministry of Environment.

There are two other federal/provincial committees concerned primarily with scientific and monitoring activities in western Canada:

a. The Western LRTAP Consultation Committee (WLCC) which is responsible for co-ordinating LRTAP activities in western Canada and is chaired by the Assistant Deputy Minister, Atmospheric Environment Service.
b. The Western LRTAP Technical Committee (WLTC) which is responsible for co-ordinating scientific and monitoring activities in western Canada and chaired by provinces on a rotating basis.

There are also two committees dealing solely with federal LRTAP activities:

a. The DOE LRTAP Steering Committee which is responsible for co-ordinating all DOE LRTAP activities and chaired by the Assistant Deputy Minister, Environmental Protection Service.
b. The Interdepartmental LRTAP Committee (ILC) which is responsible for the federal department/agency LRTAP scientific and monitoring program and chaired by the Assistant Deputy Minister, Atmospheric Environment Service.

Responsibility for the planning and co-ordination of the work of these Committees rests with the Priority Issues Directorate of the Environmental Protection Service (EPS).

The primary activity of the Priority Issues Directorate is to negotiate agreements for the actions of committee member departments to achieve LRTAP objectives and to integrate these with the actions of committee member provinces, thereby making optimum use of available resources.

DOE/EPS will lead the negotiation of the federal/provincial agreements. Since the federal/provincial/industry agreements are primarily of an industrial development nature, the Department of Regional Industrial Expansion (DRIE) will lead negotiation of these in co-operation with DOE and Energy, Mines and Resources. External Affairs will co-ordinate Canada/U.S. agreements. EPS will support and participate with External Affairs regarding Canada/U.S. activities through the provision of technical assistance and in the development and implementation of strategies for dealing with the U.S.

**Acid Rain**

Currently, the portion of the LRTAP program dealing with $SO_2$ and $NO_x$ (acid rain) has priority and involves all components of scientific research and monitoring; solution development and implementation; and communications for the LRTAP program. The issue has international implications (particularly U.S.A.) due to the fact that approximately 50 per cent of the acid rain originates in the U.S.

The solution to the acid rain problem lies in the reduction of $SO_2$ and $NO_x$ emissions in North America. To achieve this objective the plan of action at the time of this writing is:

- to negotiate federal/provincial agreements on emission levels and the actions required in each province;
- to negotiate federal/provincial/industry agreements on specific modernization/abatement actions and cost-sharing for non-ferrous smelters;
- to pursue early emission reductions in the United States;
- to continue to seek multi-lateral commitments to international emission reductions;
- to maintain the federal LRTAP scientific research and monitoring program at its current level of effort;
- to name the envoy to conduct dialogue with the U.S.; and
- to create an Acid Rain Office.

The specific objectives of the acid rain program are:

- to reduce the level of sulphate deposition to less than 20 kilograms per hectare per year in vulnerable areas by reducing sulphur dioxide emissions in the provinces east of the Saskatchewan/Manitoba border;

- to reduce total sulphur dioxide emissions east of the Saskatchewan/Manitoba border to less than 2.3 million tonnes by 1994;
- to secure comparable emission reductions in the United States within the short-term; and
- to achieve significant reductions in $NO_x$ emissions.

The results to date are:

- the eastern provinces have agreed to achieve (from the 1981 base) a 25 per cent reduction in $SO_2$ emissions by 1990 and a further 25 per cent by 1994;
- emission control requirements for new light duty motor vehicles have been amended to achieve a 45 per cent reduction in $NO_x$ emissions for this sector (from 1981 base) which will result in the total environmental level of $NO_x$ increasing by only 12 per cent by the year 2000, from the base year 1981, rather than the previously predicted 20 per cent increase -- this represents a reduction of 8 per cent in the growth of $NO_x$ levels;
- the appointment of the Canadian and American envoys has been announced; and
- the creation of an Acid Rain office has been announced.

The objectives of the scientific and monitoring component are: to verify the effectiveness of emission reduction measures; to establish the target loading for sulphate deposition; to develop further scientific understanding of LRTAP issues; and to assess the adequacy of the acid rain environmental objective for other resources at risk. Each department/agency is responsible for developing and carrying out scientific programs in relation to its departmental mandate and area of expertise in response to commitments of the Interdepartmental LRTAP Committee.

The scientific component is carried out in nine federal departments/agencies in the following areas:

Atmosphere
Terrestrial
Controls
Health
Socio/economic

The communications component objectives are:

a. to inform the Canadian public of the Canadian acid rain abatement program, particularly the federal government's commitment to reductions in acid-causing emissions in Canada and to assist in the implementation of control technologies at smelters;
b. to inform the Canadian public of the adoption of tighter motor vehicle emission standards as an effort to address acid rain;
c. to provide information on the impact of acid rain, on advances in our scientific understanding of the problem and on the progress of emission reductions;
d. to improve understanding and stimulate discussion among the U.S. public, particularly in regions beyond New England, on the acid rain issue and its transboundary impact;
e. to foster support in the U.S. Congress for adequate acid rain control legislation; and
f. to encourage the conclusion of a Canada/U.S. agreement to curb emissions.

Responsibility for the communications component lies within six federal departments/agencies and is estimated at $460,000 in 1985/86.

The communications strategy is directed domestically, bilaterally to the U.S. and multi-laterally on an international basis.

**Other LRTAP**

The other portion of the LRTAP program deals with all other airborne pollutants transferred over distance. Examples of these pollutants are:

- photochemical oxidants ($NO_x$) and volatile organic compounds reacting in sunlight to produce ozone;
- heavy metals; and
- persistent organic compounds.

Currently, these other airborne pollutants are being addressed only in the scientific research and monitoring component of LRTAP.

Funding for the federal LRTAP program (see Attachment 3) is provided through A-base commitments by departments and by supplementary funds from the Social Development and Economic and Regional Development Policy Reserves. Federal expenditures are about $18 million per year and the provinces spend a total of about $14 million per year (see Attachment 4). In addition, the federal government has earmarked up to $25 million and $150 million for cost-sharing of technology demonstration and modernization respectively, at the non-ferrous smelters. Approximately $70 million will be spent over the next few years on cleaner coal combustion. (Note: this does not include funding for envoy/Acid Rain Office.)

**PROJECTED EXPENDITURES (000s of dollars)**

**For The Priority Issues Directorate, Eps**

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries and Wages | 538 | 570 | 570 | 452 |
| Other O&M | 1,432 | 1,074 | 1,024 | 92 |
| Grants and Contributions | -- | -- | -- | -- |
| Capital | 60 | -- | -- | -- |
| **TOTAL** | 2,030 | 1,644 | 1,594 | 544 |
| Revenue | -- | -- | -- | -- |
| Person-years | 13 | 13 | 13 | 11 |

**Note** Variation in O&M is due to funding reduction for communications as issue matures.

Two person-year reductions in 1987/88 are the result of reduced funding from the Social Development reserve.

**BENEFICIARIES**

The program is of benefit to all Canadians. Much of the damage caused by acid rain is cumulative and irreversible. More than one million square miles of the eastern Canadian land mass are vulnerable. The natural resource base potentially at risk in this area sustains about 8 per cent of the Canadian GNP. This includes: sport and commercial fishing; tourism; forestry; and agriculture. The program will also reduce damage to building and structures, including those of heritage value, and reduce the impacts on persons with respiratory problems.

The non-ferrous smelting industry will derive some benefit from the modernization/abatement program.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

The Royal Society of Canada has conducted a peer review of the federal LRTAP scientific and monitoring program. The reviewers complimented the quality of much of the work being done. However, the reviewers pointed to deficiencies associated with the absence of commitment to long-term funding and to the lack of a formal centralized management mechanism as deterrents to effective project planning and to maximizing the usefulness of outputs.

## OBSERVATIONS AND ASSESSMENT

We agree fully with the recommendation of the Royal Society of Canada review of March 1984 that "the objectives of the LRTAP program be re-examined so as to render them less general and more explicit in all sectors; and that they contain, as a prologue, a statement of the public needs that they seek to serve".

The acid rain component of the LRTAP program is one of Canada's primary environmental issues, having a very high long-term damage cost in both social and economic terms, some of which is possibly irreversible. This damage has been conservatively estimated (from the readily identifiable sources and limited to only measurable building damage, sport fishing impacts and human health costs) to be in excess of $250 million per year and could conceivably be much greater. Significant impacts are not presently quantifiable in the areas of agricultural and forestry resource damage, long-term water degradation effects, overall tourism impacts and others. There is at present no commonly accepted evaluation or method of evaluating the total of suspected damages from acid rain. In view of the high costs to society, much more work can and should be done to develop reliable cost-benefit information.

The cost to society of remedial action is also forecast to be very high. In the sectors of non-ferrous smelters and coal fired electrical generation alone, the reduction, to targeted level, of $SO_2$ emissions are estimated to be as high as $2 billion over the next 10 years, with annual operating costs as high as $600 million. Industry is currently exerting a good deal of effort in this area with a view towards significantly reducing these remedial costs.

The reduction in the overall increase of $NO_x$ emissions of some 8 per cent through reductions from the light duty vehicles sector, is estimated by the petroleum refining industry to require expenditures of some $250 million over the next 15 years and will increase the automobile manufacturer's costs by approximately $150 per unit.

The majority of the scientific information and effort to date has been concentrated on the aquatic effects of $SO_2$ deposition. The program has not yet intensively addressed the other aquatic pollutants ($NO_x$, persistent organics, heavy metals, etc.) nor has it adequately addressed the non-aquatic pollutant effects (acidic, photochemical oxidants, etc.). Stakeholders have repeatedly stressed the need for improvements in the data base in the above areas in order that the program progress towards achievement of its overall objectives.

The program has achieved significant results in that overall $SO_2$ emission reduction targets have been established and accepted by provinces through formal agreements. Federal funding for direct financial support to affected industries has been announced. Federal planning and organization has been completed enabling federal/provincial/industrial negotiations on a site-by-site basis to begin.

The scientific effort has achieved a good deal of useful data and has developed some world-class results.

The scientific and policy efforts required are among the most complex and ambitious undertaken in response to environmental issues administered by a complex committee structure.

Though a large and complex committee structure exists, experience shows that this is not an effective way of identifying requirements, gaining commitments, seeking and allocating resources or measuring performance. As an example of the above, each department determines what research it will do, how much in the way of A-base resources they will commit to the issue, or whether they will seek supplementary funding from their respective policy reserves. It has been observed that the system produces results because of the quality and dedication of individuals despite the lack of real power to require commitment of resources. Because there is no way of creating an integrated total program thrust, results from the projects of individual departments and services are not totally complementary, and thus are not as effective as they could be. Concern was also expressed that the members of the various co-ordinating committees were often sending relatively junior subordinates who had no authority to make commitments on behalf of the agency being represented. This clearly weakens the structure considerably.

The potential impact of the recently announced "Acid Rain Office" has yet to be felt. None of those interviewed had any understanding or knowledge of what the responsibilities of such an office would be, how they would be carried out, to whom it would report or how it would relate to the existing organizational infrastructure. The creation of an Acid Rain Office presents an opportunity to address the issues identified above*.

Stakeholders, while supporting the objectives of the program and its relative priority as a major national issue, expressed serious concern about the way the program was managed and the quality of some parts of the technical base used in the decision-making process. While concerns varied between stakeholder sectors, the common themes were: the unavailability of information to the stakeholders and the public in general; the apparent unwillingness within DOE to consider all aspects of remedial action or quantification of threat; excessive emphasis on responding to media initiated concerns; the reliance upon European data where conditions are obviously different; the continual commentary on U.S. efforts (including Canadian communication efforts); the almost single-minded concentration on $SO_2$ and its aquatic effects; the completeness and the quality of data generated and used; the lack of understanding as to the role and mandate of DOE and the failure to clearly identify responsible contact personnel in the department.

The Royal Society of Canada March 1984 Review of the scientific programs observed that good value for the $20 million expended on research was being obtained and that much of the research was excellent and some world-class. At the same time they did express some concerns as follows:

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* Subsequent to the above interviews, the Self Evaluation Team has been provided with a description of the Acid Rain Office.

a. no single agency has authority to require that the program function effectively as a whole;
b. interaction with the U.S., provinces, universities and industry requires improvement;
c. peer review of results and scientific methodology rigor requires improvement;
d. the need for recognition that the long-term nature of the research effort requires an appropriate budgetary commitment over time, so that proper research planning can be done; and
e. that the technical program should be expanded to include increased attention to the atmosphere, terrestrial and human health concerns and that an improved approach to the socio-economic aspects be included in the generation and analysis of policy alternatives.

Almost without exception, those interviewed believed the Environment Protection Service should play a significant part in improving the quality of the environment but that this role had to be better defined in order to remove the concerns and irritants outlined above.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The LRTAP Program (including acid rain) be considered a major component in the overall context of the Management of Chemicals in Canada. A major recommendation of the DOE Self Evaluation Team for the Toxic Chemicals Management Program is therefore applicable as follows:

> "The importance and magnitude of the issue demands the highest level of authority available. This might well be in the form of a Working Group of Cabinet Ministers concerned with the management of chemicals. Membership of this Group should include, as a minimum, ministers of the four core departments (Environment, Health and Welfare, Agriculture and Fisheries and Oceans) and be led by the Minister of the Environment. This will provide the vehicle through which overall management direction, focus, integration of effort and commitment of resources can be achieved."

b. The Acid Rain Office be adequately described, organized and staffed so that it can be held accountable as the lead agency for the overall LRTAP program management, with initial emphasis on acid rain. The functions of this office would include: multi-departmental strategic planning for research and monitoring; provision of input to Canada/U.S. negotiations; strategic planning for federal control programs; negotiations with provinces and the non-government sectors for emission control; carrying out the public information program for DOE and co-ordinating the information programs of other departments for the Canadian information program.

   The Acid Rain Office Committee arrange for:

   - a Chief Executive Officer (CEO), to sit as a member of the Steering Committee for the Canadian Envoy;
   - a CEO to chair the Interdepartmental LRTAP Committee responsible for the federal scientific and monitoring program;
   - a CEO to chair the Federal/Provincial LRTAP Steering Committee; and
   - the Acid Rain Office to provide support to the latter two committees.

c. The Acid Rain Office report directly to the Minister of the Environment on toxic chemicals and LRTAP, as leader of the Working Group of Cabinet Ministers.

d. The role of the Acid Rain Office, its composition and its responsibilities be broadly communicated through a press release to the public and by direct correspondence with major stakeholders.

e. Consistent with the above, DOE be considered an operating department as it relates to the Acid Rain Office, which will maintain a reporting relationship to the Minister of the Environment only, similar to the role of FEARO.

f. The recommendations of the Royal Society Review of LRTAP Research, as noted below, be accepted and implemented expeditiously.

- The objectives of the LRTAP program be re-examined, so as to render them less general and more explicit in all sectors; and that they contain, as a prologue, a statement of the public needs that they seek to serve.
- As a sequel to this re-examination, the scope of LRTAP be reviewed, in the light of the need for regional air pollution programs in Canada, in which the integrated impact of all pollutants on all scales is the central thrust.
- The excessive concentration on sulphur compounds be lessened, so that adequate attention can be given to monitoring and analysis of nitrogen compounds, as well as oxidants and heavy metals*.
- Overall control over the LRTAP program be sharply increased, with authority for funding concentrated in some lead agency.
- Mechanisms for intraprogram and external review and assessment of the scientific research be greatly strengthened, to achieve better co-ordination of effort, and to reduce the isolation of individual researchers.
- Closer contact and collaboration be developed between LRTAP, provincial and U.S. public agencies, and the Canadian universities (which play too small a role in the program).
- The future contribution of external review, including the role of the Royal Society, be considered, especially as regards the optimum timing of such external advice.
- The role of Energy, Mines and Resources in the LRTAP research program be increased, especially as regards (i) the role of the Geological Survey of Canada, and (ii) relations between the controls program and the Environmental Protection Service.

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* Interpreted to mean that increased attention should now be directed to other airborne pollutants since the sulphur program has reached a steady state.

- Close attention be given, as a research objective, to the formulation of policy alternatives that may serve to reduce the LRTAP program, and to the analysis of information needed to choose between them**.
- The overall budget for 1984/85 of approximately $20 million (excluding the Energy, Mines and Resources control program) be regarded as sufficient for the present program, given the available person-year provision. Further funding will be needed to cover the added activities recommended in the report.
- As a matter of urgency, continued funding be provided for the essential parts of the atmospheric, terrestrial, aquatic and health programs, and that the long-term nature of much of these programs be provided for by suitable future budgetary commitments.
- Annual budgetary commitments be made in all sectors at a date allowing for orderly planning of next year's operations, especially field projects.

g. Environment Canada prepare a plan, within the next year, for a comprehensive assessment on the effects of airborne pollutants to be used in determining and priorizing future policy thrusts and their resultant resource allocation requirements, with a view to completing the assessment within three years.

h. The program management adopt a more open approach to public and stakeholder communication in terms of data sharing, joint priority setting and solution development through consensus seeking. The benefits of this approach will be greater commitment by participants and more effective and efficient achievement of objectives.

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** Interpreted to mean the inclusion of basic economic research.

## ATTACHMENT 1
## LONG RANGE TRANSPORTATION OF AIRBORNE POLLUTANTS PROGRAM
### Participating Departments and Agencies

| Department Agency | Scientific and Monitoring | Solution Development and Implementation | Communications |
|---|---|---|---|
| DOE | X | X | X |
| EMR | X | X | |
| DRIE | | X | |
| DFO | X | | X |
| NHW | X | | X |
| AGR | X | | |
| FORESTRY | X | | X |
| NRC | X | | |
| TB | X | X | X |
| MOSST | X | | |
| FPRO | | X | |
| FINANCE | | X | |

# ATTACHMENT 2
# LONG RANGE TRANSPORTATION OF AIRBORNE POLLUTANTS PROGRAM
## Committee Structure

### Federal

DOE LRTAP Steering Committee:
chaired by ADM/EPS with representatives from all services
co-ordination of DOE LRTAP activities.

Interdepartmental LRTAP Committee (ILC)
chaired by ADM/AES with representatives from all departments and agencies involved in federal LRTAP scientific and monitoring program
co-ordination of federal scientific and monitoring program.

### Federal/Provincial

Federal/Provincial Ministers' Management Board
co-chaired by Minister DOE and Minister Ontario MOE
overall co-ordination of Canadian LRTAP program and co-ordination of policy.

Federal/Provincial LRTAP Steering Committee**
co-chaired by ADM/EPS and ADM/Ontario MOE
development of Canadian abatement program and support to Ministers' Management Board.

Federal/Provincial Research and Monitoring Co-ordinating Committee (RMCC)***
co-chaired by ADM/AES and ADM/Ontario MOE
co-ordination of Canadian scientific and monitoring activities
informal links with U.S. counterpart.

Western LRTAP Consultation Committee (WLCC)*
chaired by ADM/AES
co-ordination of Canadian LRTAP activities in western Canada
mainly scientific and monitoring.

Western LRTAP Technical Committee (WLTC)*
chaired by province on rotating basis
co-ordination of scientific and monitoring activities.

* Involves Alberta Environment; B.C. Environment; Manitoba Ministry of Environment, Work Place Safety & Health; Northwest Territories Renewable Resources; Saskatchewan Environment; Environment Canada.

** Involves all provinces east of the Saskatchewan-Manitoba border.

*** Involves all provinces. A member from the WLTC represents Western Canada at most meetings.

### ATTACHMENT 3

### TOXIC CHEMICALS MANAGEMENT PROGRAM

### DISTRIBUTION OF RESOURCES RELATED TO TOXIC CHEMICAL ACTIVITIES

Environment

| TOXIC CHEMICALS GROUP | Functions | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | POLICY | | LEGISLATION | | REGULATION | | RESEARCH | | DATA | | STORAGE/ DISPOSAL | | EMERGENCY MEASURES | | OTHER | | TOTALS | |
| | PY | $1000 | PY | $1000 | PY | $1000 | PY | $1000 | PY | $1000 | PY | $1000 | PY | $1000 | PY | $1000 | PY | $1000 |
| PESTICIDES | 1 | 33 | - | — | 16 | 737 | 41 | 1217 | 1 | 42 | - | — | 1 | 66 | - | — | 60 | 2095 |
| OTHER ORGANICS | 2 | 63 | - | — | 59 | 3226 | 11.5 | 583 | 1 | 42 | - | — | 7 | 570 | - | — | 80.5 | 4484 |
| METALS | 1 | 33 | - | — | 16 | 793 | 10.5 | 576 | 1 | 42 | - | — | 1 | 50 | - | — | 29.5 | 1494 |
| OTHER INORGANICS | 1 | 33 | - | — | 4 | 160 | 3 | 154 | 1 | 42 | - | — | 8 | 600 | - | — | 17 | 989 |
| RADIONUCLIDES | .5 | 22 | - | — | 2.9 | 115 | 11.1 | 489 | .4 | 19 | 1.1 | 65 | 1 | 40 | - | — | 17 | 750 |
| FOOD/DRINK CONTAMINANTS | - | — | - | — | - | — | - | — | - | — | - | — | - | — | - | — | - | — |
| PETRO PRODUCTS | - | — | - | — | - | — | - | — | - | — | - | — | - | — | - | — | - | — |
| ACID RAIN | 1 | 35 | .5 | 15 | 48.5 | 2861 | 60 | 2423 | 3 | 383 | - | — | - | — | 4 | 136 | 117 | 5853 |
| WASTES | 1 | 33 | - | — | 37 | 2977 | - | — | - | — | - | — | - | — | - | — | 38 | 3010 |
| EFFLUENTS | 8 | 280 | 1 | 40 | 221.4 | 9693.6 | - | — | - | 5 | - | — | - | — | - | — | 230.4 | 10018.6 |
| EMISSIONS | 2 | 63 | .5 | 15 | 116.5 | 4967 | 7 | 256 | - | — | - | — | - | — | - | — | 126 | 5301 |
| OTHER | - | 35 | - | — | 1 | 50 | 9 | 667 | - | — | - | — | - | — | - | — | 10 | 752 |
| TOTALS | 17.5 | 630 | 2 | 70 | 522.3 | 25579.6 | 153.1 | 6365 | 7.4 | 575 | 1.1 | 65 | 18 | 1326 | 4 | 136 | 725.4 | 34746.6 |

## ATTACHMENT 4
## LONG RANGE TRANSPORTATION OF AIRBORNE POLLUTANTS PROGRAM
## Provincial Activity Expenditures
## 1984/85 $ Million

| | |
|---|---|
| Manitoba | 0.1 |
| Ontario | 8.9 |
| Quebec | 1.1 |
| New Brunswick | 1.1 |
| Prince Edward Island | 0.02 |
| Nova Scotia | 0.1 |
| Newfoundland | 0.07 |
| British Columbia | 1.4 |
| Alberta | 1.4 |
| Saskatchewan | 1.4 |
| **TOTAL** | **14.34** |

The activities of the provincial governments complement those of the federal government and are essentially the same as those noted in the program assessment.

# INDUSTRIAL PROGRAMS

## OBJECTIVE

To ensure that industrial and municipal activities are conducted in a manner that minimizes adverse impacts on the environment by eliminating or reducing releases of pollutants which cause losses and by containing or restricting necessary but hazardous substances.

## AUTHORITIES

A. Administered by DOE
Government Organization Act (1979)
Fisheries Act (Section 33) (1970)
Clean Air Act (1971)
Canada Water Act (1970)
Control Abatement of Pollution by Federal Activities - Clean-up and Prevention (Cabinet Decision 1972)
Environmental Contaminants Act (1974)

B. Administered by Others
Motor Vehicle Safety Act (R.S. 1970, s I, c. 26)
Canada Shipping Act (R.S. 1970, c. S-9)
Atomic Energy Control Act (R.S. 1970, c. A-19)

## DESCRIPTION

The program has three basic roles:

1. A problem definition/problem assessment role: it provides intelligence and assesses current and potential impacts of industrial and other sectoral activities on the environment.

2. A knowledge base/consulting/leadership role: it develops and maintains centres of expertise on sectoral activities, that are knowledgeable on technologies, engineering processes, raw materials, waste streams, etc. and provides engineering and technical advice to clients e.g. regional offices, other government departments, provinces, industries and municipalities.

3. A solution development/implementation role: it develops technical manuals to combat air, water and waste pollution problems and implements measures such as regulations, guidelines and codes.

Responsibilities include: the establishment and updating of inventories; characterization of pollutant releases; evaluation of control technologies; assessment of environmental impacts and socio-economic implications; public information/consultation; identification of strategies for intervening in or influencing the decision-making process; and compilation of annual compliance reports for regulated sectors.

Activities are essentially directed towards ensuring: that clients implement pollution abatement programs, thereby reducing pollution loadings to non-threat levels and repairing damage to the environment through impaired use; that activities under federal jurisdiction exemplify sound environmental practices; and that Canada meets its international environmental commitments. Current priorities include: non-ferrous smelters; utilities; vehicle emissions; national incinerator testing and evaluation program (NITEP); hazardous wastes; prevention of Bhopal-type industrial disasters; steam electric power generation; and wood protection/preservation.

The program utilizes a multi-media and holistic approach to the resolution of environmental problems. Such an approach ensures that the resolution of a problem does not result in the creation of another problem in a different medium. It permits assessment of the overall environmental impact, over the complete life cycle, i.e., from siting to decommissioning of major projects and from cradle to grave for management of toxic chemicals/substances.

The problem definition/problem assessment and knowledge base roles are largely based at HQ, particularly for national issues, with the Regions addressing site-specific issues. With regard to the solution development/implementation role, HQ is primarily responsible for the solution development, with the Regions being primarily responsible for implementation either directly or through the provinces. The regions are also responsible for enforcement of Section 33 of the Fisheries Act in the Maritimes and B.C.

In view of Industrial Programs' (IP) multi-media responsibilities/expertise which already included on-site waste disposal, it was deemed logical and cost-effective to transfer off-site waste management activities related to hazardous wastes, the Transportation of Dangerous Goods Act, recycling and the federal waste disposal sites program to IP.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 1984/85 | 1985/86 | 1986/87 | 1987/88 |
|---|---|---|---|---|
| Salaries and Wages | 7,396 | 8,654 | 8,654 | 8,654 |
| Other O&M | 4,271 | 3,552 | 3,786 | 3,186 |
| Grants and Contributions | -- | -- | -- | -- |
| Capital | 24 | 100 | 100 | 100 |
| **TOTAL** | 11,691 | 12,306 | 12,540 | 11,940 |
| Revenues | -- | -- | -- | -- |
| Person-years | 168 | 193 | 193 | 193 |

**1984/85 Total Resource Distribution by Regions and Headquarters**

| | HQ | Atlantic | Quebec | Ontario | W&N | Pacific | Total Regions |
|---|---|---|---|---|---|---|---|
| PYs | 58 | 30.5 | 13.6 | 12.4 | 23.5 | 30.1 | 110.1 |
| 000s | 4894 | 2168 | 661 | 749 | 1328 | 1891 | 6797 |

**Note** In November 1984, the activities of the Waste Management Program at headquarters were assumed by Industrial Programs. This accounts for the increases indicated above.

## BENEFICIARIES

Program beneficiaries/clients include: a variety of industrial sectors such as non-ferrous smelters, utilities and the automobile industry; the pulp and paper and forestry sectors, and chemical industries through activities directed at preventing industrial disasters; municipalities through programs such as NITEP and energy from sludges; provincial and territorial governments; other federal government departments such as Transport, Public Works, DINA, EMR and AECB, as well as other countries.

Program outputs are directed to specific industry sectors/subsectors. Their impacts affect individual industrial sites, communities both in the vicinity and often great distances away (e.g. through reduction in the long-range transport of air pollutants) and, as with new vehicle emission standards and transportation of hazardous wastes, the general public.

## POLICY REVIEWS/EVALUATIONS/AUDITS DONE ON PROGRAM

This is a new program resulting from a major re-organization of Environmental Protection Service (EPS) programs in March 1983. No formal assessments have been carried out to date.

## OBSERVATIONS AND ASSESSMENT

The objective stated for Industrial Programs reflects its role as carried out and as understood by stakeholders. It is a general statement but it should be so since the subject matter is wide ranging and subject to rapidly changing priorities.

In examining the activities carried out in Industrial Programs it is evident that the title "Industrial Programs" is not descriptive of the total work carried out especially as it relates to the recently added waste management activity.

Prior to 1978, the emphasis of this program was on regulation as the means of reducing the gross levels of pollutants emitted into the environment. More recently, the program has introduced few new regulations, directing its attention towards the development of guidelines or codes of practice. This has tended to place the program more in a consulting and advising mode, rather than the traditional role of regulator as set out in the present program objective statement. This change was brought about because the regulatory mode resulted in numerous jurisdictional conflicts and because of the growing capability at the provincial level.

### Organization

Industrial Programs at HQ is organized into seven divisions, six of which are organized to respond to six specific industrial sectors (mining, urban, renewable resources, chemical, transportation, oil and gas). The seventh division is waste management. This division was added as a result of the 1983 service reorganization. Some regions, however, have retained their former structure of air, water and land components. This is significant because of the large size of the regional organization (in terms of both numbers of people and their variety of skills). It was not possible to determine how the HQ/Regional interface avoided overlap and duplication of effort. This concern is magnified when consideration is given to the significant bodies of expertise that exist in OGDs, provinces and industry, leading to an overall concern about duplication of effort.

The role of regional offices with respect to Industrial Programs' activities is: to respond to issues of public concern in a specific region or province; to maintain close ties with provincial agencies; to identify new or emerging issues that will require detailed assessment; to provide input to a regional perspective on matters of national concern; and to implement environmental protection program requirements. Industrial Program's headquarters staff is responsible for providing expert advice and guidance to regional offices to facilitate the response to issues of public concern. As new or emerging issues are identified, IP may lead or provide input to detailed assessment activity depending on the scope (national, regional), and resources available. Where environmental issues are identified as being national in scope, and IP initiates activities related to those issues, regional input is sought to ensure the particular perspectives of a given region or province are taken into account in the decision-making process. Industrial Programs is responsible for the development of national control measures with appropriate input from regions. The regional offices are responsible for implementing those requirements either directly or through the provinces. Site-specific issues requiring either remedial or preventive control measures may be handled either by HQ or by regional offices depending on scope and resources, and are implemented by regional offices. Industrial Programs is responsible for auditing the control-instrument implementation process to ensure that it is achieving the intended purposes.

The concept of maintaining centres of expertise capable of retaining the quality of necessary expertise in all areas over time should be examined to ensure that duplication and inefficiency do not exist.

There is confusion as to accountability because authority for some actions appears to reside within OGDs or provinces, e.g.:

- auto emissions under the Transport Canada Motor Vehicle Safety Act versus the Clean Air Act;
- non-ferrous metal smelting industry covered in EMR mandate;
- occupational health (a significant factor in industrial sectors) is not considered as it is within the mandate of Labour Canada and provincial labour departments); and
- industrial emissions considered to be within provincial jurisdiction.

This brings into question Industrial Programs' role in a number of areas.

## PRIORITIES PROCESS

The usefulness of the annual compliance report suffers due to the absence of an appropriate data base and reporting system to indicate the relative progress towards the attainment of environmental quality goals. This information void, when considering the significant investment in environmental emission control efforts, raises serious questions from stakeholders as to the efficiency of past measures and the selection of priorities for new endeavours.

The ability of the federal government to respond to the wide ranging demands for attention to environmental threats is not infinite. This demands a system of strict priority setting to ensure the most effective use of resources. This does not appear to be the case. There are currently more than forty projects underway in the HQ branch and at least as many at the regional level.

Objectives, goals and priorities are established through the normal strategic, operational and work planning exercises based on current issues and in close consultation with regional offices, provincial agencies and other federal government departments. The program is flexible to meet changing priorities and is responsive to unplanned activities at the direction of the Minister/Senior Management; however, this results in slippage or displacement of normally planned activities.

## OPERATIONS

Significant meaningful work either as leader or contributor has been carried out in Industrial Programs. The following are some examples:

1. Industrial Programs was instrumental in getting New Vehicle Emission Standards endorsed by the government under the Motor Vehicle Safety Act, thereby reducing acid rain causing emissions, improving urban air quality and benefitting major segments of the general public.

2. Industrial Programs has played a pivotal role in the Pulp and Paper sector through the Pulp and

Paper Effluent Regulations and the DRIE Pulp and Paper Modernization program in ensuring that the Government's economic and environmental goals are compatible, by increasing the efficiency/competitiveness of this vital sector while also addressing pertinent environmental considerations.

3. The recently announced Steam Electric Power Generation Design Phase Code is a good example of the program's leadership role and its close consultation with industry/industry associations (in this particular case the Canadian Electrical Association/Canadian Nuclear Association), government agencies (AECB) and the provinces, in addressing environmental problems relating to specific industry sectors.

4. A good example of the scientific/technical advisory role, is the support being provided to the Minister/Senior Management on various aspects such as the socio-economic costs/benefits of reducing $SO_2$ emissions from non-ferrous smelters in support of the Government's acid rain objectives.

5. The National Incinerator Testing and Evaluation Program bears testimony to the program's ability to address complex technical problems (in this case the dioxin issue, of which incineration is considered to be a significant source) and the program's ability to obtain the co-operation of external agencies (e.g., OGDs, provinces, municipalities and the private sector) in supporting its initiative not only in principle, but financially as well.

6. The program's support of Transport Canada under the Transportation of Dangerous Goods Act not only ensures that substances of concern from an environmental perspective are safely transported but also permits tracking the international/interprovincial movement of such substances and benefits the public by preventing accidents/spills of hazardous materials.

The above examples and others will significantly improve environmental quality but will have an extensive social cost requiring large capital investments and operational costs.

Nowhere is the conflict between society's expectations of EPS to solve environmental problems in all their forms and the deficiencies of its mandate (enabling legislation, jurisdictional concerns (federal/provincial) and resource constraints) more apparent than in the Industrial Programs operations. This presents a major challenge to the organization if it is to perform a meaningful role in harmonizing its activities with the many other participants concerned with environmental issue identification and resolution. The approach to its operation in this situation becomes the key to its success.

The approach currently practised has generated a significant degree of critical comment from a wide variety of stakeholders. The criticisms centre around three areas. The first is the advocacy approach adopted in the identification and resolution of issues which tends to cast EPS in the role of advocating a particular position rather than one that balances all of the considerations at stake. Second was EPS's single mindedness in prescribing solutions and its selective use of available information to justify that position. The third area deals with the perceived relationship it has with ENGO's and its impact on EPS' credibility with the other stakeholders.

The intensity of these concerns as indicated in the course of interviews with representatives from the provinces, industry, ENGOs and particularly from other government departments described the approach as:

- biased;
- narrow (best available technology is the only acceptable solution);
- failing to consider all relevant factors (technical, economic,timing, etc.);
- not utilizing available external expertise;
- exposing opinions politically; and
- opportunistic (selective use of press sensationalism).

This was particularly evident in EPS' relationships within HQ's units.

Many stakeholders indicated that they had difficulty identifying responsible persons to deal with on specific issues because of the many and unheralded organizational changes.

Many stakeholders have also commented upon the good quality of advice provided and the co-operation given on specific projects and issues.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The objective statement and program description be rewritten as to:

   - clearly indicate what it is intended that the program do;
   - broaden to include non-industrial programs covered;
   - focus on what can be practically achieved; state in measurable terms; and
   - set out jurisdictional capabilities and identify requirements for joint action.

b. The objective statement for Industrial Programs be modified to reflect the integration of Waste Management Program responsibilities.

c. The lines of Industrial/Urban Programs be re-named to better reflect all responsibility areas and the organizational structure be reviewed to:

   - describe the interface that should exist between HO (program policy) and the delivery of elements at the regional level (program execution) to ensure effective use of resources through minimizing opportunities for duplication and overlap;

   - review the centre of expertise concept to ensure maximum use of external resource expertise with a view towards contracting for special skills;

   - communicate with stakeholders to explain the organizational shift from one of sole centre of expertise to one responsible for the identification and transfer of expertise in an advisory and consulting mode; and

- rationalize and agree upon assignment of responsibilities commensurate with existing authorities and set out clearly in a Memorandum of Understanding between EPS and other government departments and specific provinces.

d. A data base and reporting system, in co-operation with provinces, be developed and maintained to indicate the relative progress or trends towards the attainment of specific environmental quality objectives or the degree of change in the quality of the receiving environment. This would assist in determining the actual impact or success of the mitigating action in place as well as set the basis for establishing priorities.

e. A joint priority-setting process be established with relevant stakeholders which takes into account the seriousness of the threat, social and economic consequences, and the availability of appropriate technology so that decisions can be made that focus upon the prime areas of concern and ensure more effective use of resources.

f. The advocacy role, as practised, be discontinued since it is misunderstood and damaging. It should be replaced with a consensus-seeking consultative approach to both issue identification and solution development. This will provide a higher degree of commitment by stakeholders including labour and make possible a better use of all available expertise and resources.

g. Ensure that occupational and environmental health considerations are significant elements in the decision-making process.

# FEDERAL ENVIRONMENTAL ASSESSMENT REVIEW OFFICE PROGRAM

## OBJECTIVE

To ensure that the environmental effects of federal government actions, including federal decisions to fund or authorize private sector activities are understood and, if adverse, mitigated to maintain an acceptable level of environmental quality.

## AUTHORITY

Key: Government Organization Act (1979)
Establishment of the Federal Environmental Assessment and Review Program (Cabinet Directive 1973)
Amendment of the Environmental Assessment and Review Program (Cabinet Directive 1977)
Changes to EARP (Guidelines Order 1984).

## DESCRIPTION

The Federal Environmental Assessment Review Office (FEARO) administers the Environmental Assessment and Review Process (EARP) which is directed at ensuring that for federal programs, projects and activities, potentially adverse environmental consequences are considered at the planning stage.

FEARO develops and implements procedures, guidelines and administrative references to facilitate the environmental assessment process,organize and convene Assessment Panels; ensures that all projects submitted to environmental impact assessment panels receive competent reviews; and evaluates the performance of the environmental impact assessment process and recommends appropriate changes to improve its effectiveness.

It is the sole responsibility of federal departments to screen their initiatives for potential environmental impacts; to conduct Initial Environmental Evaluations (IEEs) of those initiatives which the screening process suggests may produce important environmental impacts; and to refer to the Minister of the Environment, those initiatives for which the IEEs indicate the environmental effects could be significant.

Separate environmental impact assessment panels are established for each project referred to FEARO for review. Each panel develops guidelines for the preparation of an Environmental Impact Statement (EIS) by the federal department or agency initiating the particular project; studies the EIS as well as any additional material; holds public meetings and analyzes the public response to the EIS; and prepares and submits to the Minister of the Environment and the Minister responsible for initiating the project, a report containing an examination of the major impacts of the project and recommendations concerning the project's implementation. Panel membership is comprised of respected, knowledgeable individuals from any source, including government and other countries.

While several Canadian provinces have enacted environmental assessment legislation in recent years (Saskatchewan, Ontario, British Columbia, Quebec, Newfoundland), the approach is joint federal/provincial reviews wherever possible. Alberta, while not having a specific Act, conducts environmental hearings and other work under the authority of the Energy Resources Conservation Board (ERCB) or the Alberta Department of the Environment Act.

Resources are primarily (approximately 50 per cent) expended to establish and operate independent public review panels. Other activities are to administer review procedures, provide policy guidelines and advice to participating agencies, and to develop recommendations for appropriate policy improvements. The number, size and complexity of projects referred to FEARO for review are the main determinants of resource requirements.

The panel hearings are informal and are open to any one with an interest in the proposal. Hearings are held locally and in larger centres of interest. These panels are non-judicial (no rules of evidence), and are normally chaired by a FEARO officer. In some cases, hearings can be divided into community or technical areas of interest. The recommendations of the panel, though respected, are not legally binding, and therefore do not have to be implemented by the originating department.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 1,322 | 1,368 | 1,368 | 1,368 |
| Other O&M | 1,963 | 2,346 | 2,364 | 2,364 |
| Grants and Contributions | -- | -- | -- | -- |
| Capital | 5 | 6 | 6 | 6 |
| **TOTAL** | 3,290 | 3,720 | 3,738 | 3,738 |
| Person-years | 28 | 29 | 29 | 29 |

**Note** Change in budget 1984/85 to 1985/86 due to implementation of the Canadian Environmental Assessment Research Council (CEARC) (See Point 3 in Appendix I)

**BENEFICIARIES**

Major stakeholders and beneficiaries are Canadian residents who may be adversely affected by a development as well as government and private sector corporations which might also be affected in their planning activities.

Future generations of Canadians through the avoidance of downstream environmental and socio-economic costs that could have occurred with the undertaking of activities having poor environmental design.

The environmental and social assessment business components.

**POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM**

In 1982, as a result of a request by the Ministry of State for Social Development (MSSD), an independent evaluation was conducted on the way in which government departments were implementing their responsibilities under EARP. This evaluation was restricted to the "front end" or initial assessment phase of EARP, which is the sole responsibility of initiating departments, excluding panel operations and follow-up. The key findings of this study are as follows:

a. There was "enthusiastic support for the process and for consideration of possible social and economic impacts as well as those related to the physical environment".

b. Within most of the departments examined there was either a lack of or an ineffective system management function for EARP. This resulted in inconsistencies, inefficiencies and unpredictability in the screening phase of the process.

c. The documentation of screening decisions in most government departments was so skimpy or inaccessible as to make it virtually impossible to determine conclusively whether or not they were meeting their EARP obligations.

d. FEARO's role in the process was not adequately defined, nor did it have the authority to provide effective guidance to departments to ensure consistent implementation procedures.

e. EARP requires adequate criteria and guidelines as a basis for making screening decisions.

These and other related observations from the evaluation were incorporated into the assessment of the entire process conducted during 1983 and the first half of 1984, culminating in the Order-in-Council on EARP in June 1984 (see Attachment 1). In addition to the 1982 evaluation, a process assessment was conducted by FEARO in consultation with government departments and taking advantage of advice offered over the years by industry, the public and the provinces. This identified a number of other problems, both real and perceived, which required resolution. These have now all been addressed and all but a few appear to have been solved, although it is still too early in the implementation of the improvements to be conclusive in this regard. A summary listing of the identified problems and the proposed solutions is attached (Attachment 1).

The main outstanding items for which definitive action is still needed are the matter of intervenor funding and the mandatory inclusion of all federal Crown Corporations in the process. A new, comprehensive Screening and Initial Assessment Guide for EARP is in the final stages of preparation, a new panel procedures document has been published, new EARP procedures are being prepared in all major departments for completion in the current fiscal year, co-operative arrangements are being made with provinces starting with an accord with Alberta and research is underway through both the new Canadian Environmental Assessment Research Council (CEARC) and FEARO itself to identify further improvements and efficiencies that could be adopted in the future.

## OBSERVATIONS/ASSESSMENT

The objective is understood and accepted by major stakeholders. It does have limitations in terms of its ability "to ensure" compliance. A more accurately worded objective would be "to provide a process which works towards ensuring ...", and "private sector" should be changed to "non-government sector".

FEARO does not as an organization play the role of an environmental advocate. Its objective is to manage the process in such a way as to encourage environmentally compatible development. This approach has enhanced both the credibility of the office and the review process itself.

The process is designed to consider directly related social aspects, and it is within the prerogative of initiating Ministers to widen the scope of assessment guidelines to include broader social aspects. However, it is recognized that many social aspects are within other jurisdictions and there are other avenues of addressing such concerns.

This process has been extensively reviewed over its 12-year history and has evolved into a mature process which allows for flexibility of response to widely varying situations of proponents, proposals and jurisdictions.

Over the program history, 27 formal panels have been struck ranging from resource development through various major transportation initiatives. FEARO office costs for the full panel processes vary according to size and complexity of projects (Wreck Cove review at $9,000 where the panel was totally federal government to the Beaufort Sea review at $2,800,000).

Proponent costs over the range of hearings vary even more and are subject to differences in perception as to what constitutes real costs. For example, in the Beaufort review FEARO estimates industry costs at $7 million while industry estimates its costs at nearly double this amount. The key difference appears to be in the valuation placed upon proprietary data exposed at public hearings and the extent of attribution of costs to the panel.

The evolution of the process has moved the perception of the Environmental Assessment Review Process to more of a planning tool in the decision making process than a regulatory process and this has had a very positive response from stakeholders. It is intended that regulatory processes will be instituted through other mechanisms.

A recent study by an environmental consultant, concluded that a major benefit of EARP was that it provided an arena for major government departments to openly consult, communicate and begin to negotiate future roles, responsibilities and involvement in projects. This has the effect of clarifying confusing government roles and mandates to the public.

There is potential for overlap between EARP and National Energy Board (NEB) hearings, where the latter apply. This comes about because NEB hearings can re-open all issues that were previously aired in the EARP. Similarly overlap can occur with provincial environmental assessment procedures.

An observed strength of EARP as administered by FEARO is the public review of the guidelines for the Environmental Impact Statement, which allows for response to concerns and improvements in guideline composition.

Changes to EARP resulting from the June 1984 Order-in-Council are too recent to completely assess. However, indications from stakeholders interviewed suggest that the changes will, if carefully implemented, resolve many of their former concerns.

There remain some issues that stakeholders believe require resolution. They are:

a. Funding for intervenors to prepare their interventions. This was introduced on a trial basis in the Beaufort Sea hearings; while generally supported, concerns were raised as to who constitutes a legitimate intervenor and what constitutes a legitimate intervention in terms of the panel purpose.

b. The inclusion of Crown Corporations in the process. It is generally felt that no project or organization using public funds should be exempted from this process.

c. The open-endedness of the process concerns proponents in terms of: topics/areas covered; the lack of deadlines; and the degree of detail required resulting in inefficient use of resources in terms of time and cost.

d. Assurances that recommendations will be implemented. The suggested solution of legislating compliance would place the process in the hands of lawyers, resulting in legal rather than environmental solutions being developed. This is undesirable; on the other hand, some assurance must be provided to give proponents a sense of security that the time and effort expended were not wasted. Concern should also be exercised to ensure that FEARO is not and does not appear to be the government's watchdog on environmental issues.

e. Reporting relationship - the concern here is seen as one of bias by having FEARO report to the Minister of the Environment. There is no evidence to suggest that the reporting relationship has had any negative impact on the credibility of the office or on EARP itself.

f. Jurisdictional duplication - concern was raised with the potential problem of having to satisfy both provincial and federal environmental assessment processes. A good deal of effort has been expended towards resolving this potential problem with success, but the effort should be continued to minimize duplication and overlap.

f. Failure to distinguish between concept and specific proposal types of hearings has caused considerable concern and inefficiency in the past.

FEARO's small staff (28 person-years), budget ($3.7 million) and high reliance on private sector contractors (72 per cent of O&M) reflects a level of efficiency that compares well with much larger regulatory bodies and with much more expensive ad hoc tribunal and enquiry processes.

In summary, the EARP program is designed to encourage the introduction of environmental and related social concerns into the government's planning and decision making processes at an early stage. The key thrust is to make this a self evaluation process by initiating departments rather than a regulatory process. This appears to be a sound concept. The process as judged by four criteria - fairness, effectiveness, efficiency and accountability - is found to be fair and effective but requires some improvement with regard to efficiency and accountability.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. FEARO continue to encourage other government departments and agencies to introduce environmental and related social concerns into their planning and decision-making processes at an early stage. Demands to have FEARO perform a regulatory surveillance role over other departments regarding Environmental Impact Statements (EIS) should be rejected as counter-productive. Better results would be achieved by requiring that departments and agencies prepare and present an annual report of planned initiatives including their plans for screening or for submitting an appropriate EIS to their respective ministers and that the EIS be made available to the public at least 90 days prior to commencement of the initiatives.

b. NEB and FEARO consult and enter into an agreement on the applicability and acceptance of EARP findings in subsequent NEB hearings, to remove potential duplication and associated increased costs to proponents. These agreements should be taken in the form of a Ministerial Memorandum of Understanding (MOU) and include any necessary amendments to existing legislation.

c. Funding interventions be made as government policy, but with controls to ensure that planned interventions are consistent with panel guidelines. Cost sharing should be in equal shares between initiating departments and proponents.

d. FEARO develop criteria for determining to whom and under what conditions funds will be provided for each panel. This should be done at least six months in advance of proposed hearings.

e. FEARO work with stakeholders to develop the criteria for determining what the real costs incurred by proponents and others are. This will ensure consistent accounting and presentation of these costs when determining the cost effectiveness of the actions.

f. A means be sought to amend Crown Corporation legislation in order to ensure Crown Corporations are subjected to the EARP process.

g. Terms of Reference (as provided for in the June 1984 Order-in-Council) for specific panels indicate a precise identification of the areas and topics to be considered by the panel; a schedule of events for the major components of the review process as well as an indication of the desired level of detail required to satisfy review issues. Terms of Reference should clearly indicate whether the panel is to consider a concept or a specific project.

h. The initiating Minister and the Minister responsible for EARP, on receipt of panel recommendations, consult and determine those recommendations that are to be accepted and implemented and to provide rationale for non-acceptance. These deliberations should be concluded and jointly announced within six months following receipt of the report.

i. The Minister of the Environment arrange for the undertaking of programs to monitor the actual environmental impacts of projects/activities and relate these effects to the forecasted impacts; the results of such programs to be used in improving the techniques applied in identifying potential environmental impacts of proposed activities. These programs should not be funded or administered by FEARO, but their findings should be made available to FEARO.

j. FEARO accelerate negotiations with each concerned province and territory to reach a federal/provincial/territorial accord on environmental assessment. Such accords should be constructed to ensure consistency in approach between the two jurisdictions and the elimination of duplication and jurisdictional conflict. These accords should be made public so as to provide the broadest possible understanding by all concerned individuals.

## ATTACHMENT 1

# FEDERAL ENVIRONMENTAL ASSESSMENT REVIEW PROCESS PROGRAM

## CHANGES TO EARP RESULTING FROM ORDER-IN-COUNCIL
## SOR/84-467, JUNE 22, 1984

### A. POLICY ISSUES

| | PREVIOUS | | PRESENT |
|---|---|---|---|
| 1. | Process authority for EARP was derived from somewhat outdated Cabinet directives in 1973 and 1977. | 1. | Cabinet affirmed that EARP is government policy and the guidelines governing the implementation of EARP have been promulgated through Order-in-Council under Government Organization Act, 1979. |
| 2. | There is no intervenor funding policy for EARP reviews. | 2. | A submission will be prepared for Cabinet consideration of a government-wide policy on intervenor funding, including intervenor funding for EARP public reviews. |
| 3. | The Canadian Environmental Assessment Research Council was created to recommend co-operative research aimed at sharpening the focus of scientific information assessments. It had no operations funds. | 3. | $500,000 will be provided annually to support work of the Council and enable implementation of its recommendations through co-operative projects with industry, federal and provincial agencies, etc. |
| 4. | Schedule D crown corporations and federal regulatory agencies were "invited" to apply EARP. | 4. | The proposed Order-in-Council Guidelines applies to federal crown corporations and regulatory agencies, as long as there is no legal impediment to such application nor resulting duplication of responsibilities. |

## B. PROCEDURAL IMPROVEMENTS

| | PREVIOUS | | PRESENT |
|---|---|---|---|
| 1. | There was potential for duplication with regulatory procedures and provincial requirements. | 1. | EARP is considered an early planning tool with increased use of joint federal-provincial reviews. |
| 2. | Documentation of initial screening undertaken by departments and public access to that documentation was uneven. | 2. | Procedures will be developed by departments according to general guidelines provided by FEARO, including public access to decision records, reflecting principles of Access to Information Act and identifying exempted categories of activity. |
| 3. | EARP's silence on impacts external to Canada did not accord with various international obligations and policy pronouncements. | 3. | EARP will apply to transboundary impacts and in limited fashion to foreign aid projects. |
| 4. | Public review practices and objectives were vague and procedures were left to each panel to determine. | 4. | Public review practices and objectives are now set out and core procedure will be issued by FEARO who would also exert procedural control over panel work. |
| 5. | Scope of EARP was vague with respect to socio-economic issues. | 5. | Basic scope is defined as environmental issues and those social issues which are related directly to the environmental issues, with possible broadening of scope at the discretion of the initiating Minister. |
| 6. | No formal requirement for panels to have Terms of Reference. | 6. | Each panel will be issued Terms of Reference by Environment Minister drafted in consultation with initiating Minister. |
| 7. | The conventional EARP public review was not well suited to certain special situations that arise from time to time. | 7. | Greater flexibility will be introduced to deal with conceptual reviews at the early planning stage and to permit rapid "design" reviews where there is no need to examine the entire proposal. |

| | | | |
|---|---|---|---|
| 8. | Entitlement for initiating departments to have members on environmental assessment panels has created problems of credibility. | 8. | This is no longer mentioned: neither precluded nor required. |
| 9. | Panels report to Environment Minister who consults with colleagues, then makes report public at his/her discretion. | 9. | Panels will submit their reports to both Environment and initiating Ministers simultaneously who would then jointly release report. |
| 10. | Provisions for government response to panel reports are not always clear. | 10. | Initiating Minister will decide on extent to which and how those panel recommendations within his areas of responsibility would be implemented and would determine manner in which such decisions would be made public. |
| 11. | No requirement for periodic reporting of EARP implementation. | 11. | FEARO will provide periodic reports to the Environment Minister on EARP implementation, based on information provided by departments. |
| 12. | Previous FEARO budget was 25 PY's and $1,200,000 in operational funds, although in most years, some supplementary funding is needed for unanticipated public reviews. | 12. | New proposals would add to the FEARO budget 3 PY's and $300,000 in operational funds, in addition to item A3 above, for guiding and reporting on EARP implementation. |

## TECHNICAL SERVICES

### OBJECTIVE

In support of overall Environmental Protection Service (EPS) objectives to prevent, reduce or eliminate pollutants that contain necessary but hazardous substances and to clean up when accidents occur, the objectives of the Technical Services program are:

a. to help find technical solutions to environmental threats and to transfer them to industry and government (a spin-off is promotion of the pollution abatement industry); and

b. to provide government with the capability to identify and measure environmental threats.

### AUTHORITY

Key: Administered by DOE
Government Organization Act (1979)
Fisheries Act (Section 33) (1970)
Environmental Contaminants Act (1976)
Clean Air Act (1971)
Ocean Dumping Control Act (1974/75)

### DESCRIPTION

Technical Services maintains centres of expertise in laboratory facilities at Ottawa and Burlington, Ontario, and operates four regional laboratory locations at Halifax, Montreal, Edmonton, and Vancouver.

The Ottawa facility deals with air quality, toxics, spill technology, air and auto emissions monitoring.

The Wastewater Technology Centre (WTC) at Burlington deals exclusively with the development and demonstration of abatement technology for water and waste.

The program activities include (with approximate percentage of total resources allocated):

a. Promotion of the development and demonstration of pollution abatement technology for air, water and soil pollution; oil and chemical spills; and waste management. In-house "centres of expertise" are maintained in this area, with approximately 70 per cent ($3,898,000 for 1985/86) of the O&M used to contract with the private sector. The program includes use of industrial incentive funds from EPS, Energy, Mines and Resources, Supply and Services, Regional Industrial Expansion and the National Research Council to support development and demonstration of innovative environmental protection technologies. This external funding comprises approximately 50 per cent ($2,834,500 for 1985/86) of O&M funds. Most projects involve hands-on participation by EPS staff and also involve participation by the private sector (industrial incentives 20 per cent; spills 11 per cent; water 10 per cent; waste 7 per cent; air 1 per cent -- totalling 49 per cent of total program).

b. Technology transfer and dissemination to target audiences in industries, small businesses, consultants and other branches of government through seminars, publications and training (11 per cent of total resource which includes staff time associated with advisory, information exchange and standing committees).

c. Maintenance of core capacity for chemical analyses and toxicity testing in four regions and chemistry laboratories in two technology centres (both located in the 5th region -- Ontario -- at Burlington and Ottawa). The core capacity provides basic in-house capacity and expertise for regulatory support including compliance tests; routine testing; method development work; and quality control/assurance for work contracted to the private sector. Approximately $700,000/year is contracted to the private sector. (Regions 13 per cent; HQ 11 per cent of total program respectively.)

d. Co-ordination of the National Air Pollution Surveillance Network, including equipment evaluation, quality control programs, data processing and distribution, and operator training. The provinces operate the sampling stations (in Canada's 50 major urban centres) on a day-to-day basis and share the costs equally with the federal government (8 per cent of total program).

e. Provision of vehicle emission monitoring services for Transport Canada to ensure new vehicles meet standards under the Motor Vehicle Safety Act (MVSA), and for other clients, such as DOE and Energy,Mines and Resources, to assess emissions from vehicles using alternate fuels in Canadian conditions. The laboratory is the only one in Canada certified to test to U.S. Environmental Protection Agency criteria (5 per cent of total program).

f. Capability to measure emissions from industrial chimneys and development of measurement technology (3 per cent of total program).

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 8186 | 8316 | 8316 | 8316 |
| Other O&M | 7010 | 5669 | 6065 | 5674 |
| Grants and Contributions | 5 | 5 | 5 | 5 |
| Capital | 1866 | 1682 | 1796 | 1787 |
| **TOTAL** | 17067 | 15672 | 16182 | 15782 |
| Person-years | 192 | 188 | 188 | 188 |

The 1984 distribution of dollars and personnel by region and headquarters (Technical Services Branch) is as follows:

| | **Regions** | | | **HQs** | |
|---|---|---|---|---|---|
| | **$000s** | **PYs** | | **$000s** | **PYs** |
| Atlantic | 839 | 12.6 | HQ's Office | 4,652 | 37.2 |
| Quebec | 724 | 10.2 | Ottawa Lab | 5,474 | 61.0 |
| Ontario | 73 | 1.4 | Waste Water | 3,853 | 47.0 |
| W&N | 781 | 10.4 | Technology Centre | -- | -- |
| Pacific | 671 | 12.2 | | | |
| **TOTAL** | $3,088 | 46.8 | **TOTAL** | $13,979 | 145.2 |

**BENEFICIARIES**

Major stakeholders include Canadian industry (oil and gas, food processing, pulp and paper, etc.), firms marketing pollution abatement expertise and equipment, and municipal governments. In the last three fiscal years industry has transferred an average of $550K/year to Technical Services. In addition, approximately $15 million per year is invested by industry in joint R&D and full-scale projects involving technical support from Technical Services Branch. For example:

> Under the Development and Demonstration of Resource and Energy Conservation Technology (DRECT) an industrial incentives program administered by EPS, 30 projects over 6 years involving $25 million industry investment and $5 million from DRECT with annual savings realized of 0.5 million barrels of oil and 0.5 million tonnes of waste recovered.
>
> The total cost of the Baffin Island Oil Spill (BIOS) project managed by TSB is $6.64 million with 24 per cent from EPS and 37 per cent ($2.5 million) contributed by industry (not including salary costs). The project is providing real-world information about the fate and effects of, and countermeasures for, oil spills in the Arctic.
>
> The Radwaste Project totalling $1.5 million was cost shared 50:50 with a number of Canadian mining companies and resulted in Rio Algom Ltd. installing a $7 million wastewater treatment facility at its uranium mine at Elliot Lake. The technology has been used at other mines.
>
> The evaluation and demonstration of technologies for the high-rate anaerobic treatment of concentrated and complex wastes in the agriculture and food processing sectors have resulted in over 10 full-scale facilities which save capital and operating costs for their owners. This technology is currently being demonstrated in a joint PILP (Program for Industry and Laboratory Projects) project with MacMillan Bloedel at its pulp mill in Sturgeon Falls, Ontario. The almost $1 million project will lead to a multi-million dollar full-scale treatment system.

Federal and provincial departments responsible for environmental protection and local authorities are also stakeholders. For example, methods for phosphorus removal from waste waters were developed with Ontario and implemented in over 200 municipalities, saving 75 per cent ($55,000,000) on capital investment and 35 per cent on annual operating costs. This techology effort contributed to an 80 per cent reduction in phosphorus discharges to the Lower Great Lakes.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

The spill technology component was reviewed in 1980/81. It was concluded that the program was needed and that the management was sound. It was recommended that more emphasis be placed on chemical spills, and this has been done (now about 40 per cent of the spill technology program).

The waste water technology component was reviewed in 1982/83 under contract by J.F. MacLaren. It was concluded that the program was appropriate for the federal government, despite associated administrative constraints, and that it should be expanded to match increases in GNP and that the private sector should have greater access to the expertise and facilities. The consultant also recommended greater input of EPS regions, universities and private organisations to the program planning. Subsequently, increased emphasis was placed on multi-sector technical advisory committees, and planning meetings in the regions with EPS staff.

The waste water component was reviewed again in 1985/86 by the department, with particular emphasis on the possiblity of privatization. It was concluded that the program cannot be effectively privatized at this time because of the lack of a well-defined long-term client industry. Additional cost recovery may be possible, however, through use of licensing arrangements, greater marketing efforts, and more formal involvement of the provinces and industry in the management of the program.

## OBSERVATIONS AND ASSESSMENT

The objective as stated properly reflects the role and appears to be well understood by stakeholders.

In order for Environment Canada (and specifically EPS) to be perceived as, and be capable of, being an unbiased partner in the responsible management of Canada's environment in the future, it will require a strong and credible technical base.

The key challenge will be the effective management of this base, utilizing both in-house expertise, as well as OGD and private sector initiatives.

It will also involve finding that balance between Technical and Research effort that is "nice to know" and that which is applicable to current issues. In the view of the study team the Federal role should be to:

- provide world class technology;
- address the technical needs having national application and which cannot be addressed by other jurisdictions (provinces, OGDs, industry, etc.);
- transfer that technology for the widest possible application;
- provide a national and international credible scientific and technical base;
- ensure that the technological capabilities residing outside government are known and utilized in solving problems; and
- take the initiative to determine the appropriate balance between maintaining in-house and utilizing external sector technical expertise.

There was significant recognition among the external stakeholders that the Technical Services program had produced a high quality product that was useful and that made a significant contribution to the resolution of specific issues, e.g.:

- waste water treatment research and development applicable in municipal systems; and
- fate and effects of Arctic oil spills.

There is an extensive though complex priority setting process that links project development through to the strategic plan. Priorities are developed jointly with program staff in the regions and at HQ, with input from affected stakeholders. The final work plan is reviewed and approved by both the Service and Department Management Committees. This is an adequate process for the establishment of meaningful priorities.

The monitoring and sampling activities carried out by Technical Services (air-related work at Ottawa and other work at the regional laboratories) to identify and measure environmental threats end with the collection and reporting of the data. The evaluation of the significance of the threat as an entity and its significance in relation to other threats is left to others to determine. The responsibility for making this determination is not clearly identified. This often results in problems being identified but not quantified in terms of seriousness or impact.

The National Air Pollution monitoring networks managed by Technical Services, and co-ordinated through the Federal/Provincial Committee on Air Pollution, has not been evaluated for technical significance in light of the current pollution challenges, nor does it apparently produce results which are easily understood.

The regional labs, where engaged in routine sampling analysis and investigative work, utilizing standard analytical tools and equipment, present a clear opportunity for contracting out.

The Burlington Wastewater Technology Centre presents a unique, world-class facility for Canada, and is highly consistent with an overall strategy aimed at technical excellence. It has a good base of both in-house governmental and private sector funding support. The current level of external funding attracted by this facility's operation was in the order of $2 external for $1 DOE.

The Ottawa facility conducts both routine automotive emission testing and emergency response technical work which could be contracted out at any time. This would enable the facility to concentrate on issues of national concern in terms of air pollution, as demonstrated in the current Stacks Emissions Project.

**OPTIONS**

The study team recommends to the Task Force that the government consider the following measures:

a. Technical Services engage in technology development which can be clearly identified as implementable in the medium term (ten years) and for which a viable alternative generation method is not feasible nor appropriate technology exist (i.e., across sectors or national in scope).

b. Maximize non-government sector involvement in joint technology development ventures, treating such potential as priority efforts including development of equipment and processes which reduce the cost of pollution control or permit economical use of the byproducts of pollution control equipment.

c. Build processes which will take into account research and technical effort being conducted in other sectors of society to ensure the maximum utilization of these efforts while avoiding potential duplication.

d. Subject all monitoring results to evaluation for significance and trend of the findings, thereby ensuring focus on priority issues.

e. Undertake a scientific review and evaluation of present air monitoring methods for applicability to current and forecast concern areas and implement appropriate action.

f. Take the lead role in organizing a review with OGDs, provinces and the non-government sector of air monitoring efforts aimed at the elimination of duplication and overlap. The existing Federal/Provincial Committee on Air Pollution should be utilized in this effort. This review would:

   - identify air monitoring efforts currently being conducted by all sectors;
   - develop agreed-upon levels and types of monitoring required of each sector; and
   - develop an agreement for the integrated conduct of this monitoring effort.

g. Contract for services at the regions for routine analyses over the next 18 months. In order to implement the strategy a variety of innovative joint initiatives may be required.

h. The Burlington WTC remain in place, as is, with increased encouragement to aggressively seek private sector support for its efforts, ensuring that its work has a high degree of applicability. To facilitate this thrust, it is recommended that consideration be given to the establishment of a Board of Directors, comprised of industry, university, ENGO, provincial and federal sector representatives, which would be charged with the responsibility to direct and provide stewardship for this research effort.

i. At Ottawa, begin the process immediately to contract-out both the automotive emission labs and the preparation of technical manuals for emergency planning. Focus efforts on toxics in air and identified priority issues such as the Stack Emissions Study.

j. Consideration be given to further downsizing of the oil spill technology development effort since this is now a mature technical area requiring only monitoring.

# COMMERCIAL CHEMICALS PROGRAM

## OBJECTIVE

To eliminate or reduce releases of pollutants by containing or restricting hazardous chemicals. This is achieved by a) assessing their environmental effects (new and existing chemicals), b) controlling their entry into the environment through either restrictions on import or manufacturing or on their use or product composition, c) developing and implementing control measures, and d) advising the provinces or other governments or agencies with regulatory responsibilities for existing or potential effects of commercial chemicals.

## AUTHORITY

Key: Government Organization Act (1979)
Environmental Contaminants Act (1976)
Clean Air Act (fuel additives) (1971)
Canada Water Act (1970)

Other: Pest Control Products Act (1972)
Transportation of Dangerous Goods Act (1980)
International Treaties and Agreements

## DESCRIPTION

Activities in this program include:

a. determination and analysis of use patterns of commercial chemicals including pesticides;
b. administration of procedures for a new chemicals notification system and evaluation of these notifications;
c. assessment of the environmental fate and effects of existing chemicals;
d. development of relevant control strategies;
e. regulation development under appropriate legislation;
f. non-regulatory controls;
g. guidelines for environmentally safe use of chemicals;
h. management of co-ordination of federal/provincial co-operative compliance and enforcement activities including regulatory, seminars and other technical information transfer activities;
i. evaluaton of new pest control products;

j. re-evaluation of priority registered pest control products based on new information;
k. evaluations of federal pest control programs;
l. evaluation of research permit application;
m. development of guidelines for assessment of pesticides;
n. liaison with, and advice to, OGDs, provinces and the public;
o. Canadian focus for export notifications on banned or severely restricted chemicals;
p. participation as technical experts in various international control development activities (OECD, UNEP, etc.); and
q. enforcement of regulations.

This program falls entirely under the Toxic Chemicals Management Program, and constitutes a major component of the Environmental Protection Services operational activities in this sector.

Program priority areas are the assessment and control of commercial chemicals and provision of advice on pesticides management.

The major aims of the Commercial Chemicals Program are to assess commercial chemicals and to reduce the input of hazardous chemicals to the environment, under the authority of the Environmental Contaminants Act. The program also addresses commercial chemicals via legislation other than the Enviromental Contaminants Act (Clean Air Act, lead in gasoline, Canada Water Act, nutrient control provisions dealing with phosphorus in detergents, etc.).

Under the Environmental Contaminants Act, assessment procedures by Commercial Chemicals Branch (CCB) have resulted in the regulation of five groups of chemicals:

Mirex
polybrominates biphenyls (PBBs)
polychlorinated biphenyls (PCBs)
chlorofluorocarbons (CFCs)
polychlorinated terphenyls (PCTs)

The major outputs of this program are 1) chemical hazard assessments, 2) appropriate federal regulatory controls, 3) co-ordination of federal/provincial inspection and enforcement activities (including seminars), 4) nationally consistent regulatory approaches, and

5) timely environmental assessments in relation to pesticides. The effects achieved are that:

a. the volume and number of pollutants released to the environment are reduced;
b. the detrimental environmental impacts from new products are reduced;
c. material losses due to the inadvertent release of pollutants are reduced (e.g., PCB release regulations);
d. regulatory actions of all levels of government are more consistent and complementary;
e. industry does not introduce new chemicals without an assessment of environmental aspects; and
f. the level of risks associated with commercial chemicals are known and communicated.

New chemical notifications under the Interdepartmental Committee on Contaminants range between 250 to 450 per year and are reviewed within CCB. Approximately 100 of these are presented to the Interdepartmental Evaluation Committee for further environmental and health hazard evaluation. This Committee ensures that economic, technological, social and geographical factors are taken into consideration before action is taken to restrict a substance. This Committee ensures a proper forum for discussion of departmental interests. The Chairman is the ADM, Environmental Protection Service, Department of the Environment; the Vice-Chairman is the Director General, Environmental Health Protection Branch, Department of National Health and Welfare; the Secretary is the Director of CCB, with representation from other concerned agencies such as Fisheries and Oceans.

Regional offices support use pattern identification activities (taking surveys to establish volume used and distribution of specific chemicals) and are involved in data development (for assessments) specific to the region. The regional offices also are directly involved in enforcement of legislation and in Provincial Pesticides Boards.

The Environmental Contaminants Act is the joint responsibility of DOE and NH&W and is administered by the Commercial Chemicals Branch of DOE's Environmental Protection Service.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 2,747 | 2,833 | 2,833 | 2,833 |
| Other O&M | 987 | 1,058 | 1,123 | 1,123 |
| Grants & Contributions | 41 | -- | -- | -- |
| Capital | 5 | 74 | 0 | 0 |
| **TOTAL** | 3,780 | 3,965 | 3,956 | 3,956 |
| Person-years | 64 | 63 | 63 | 63 |

Approximately 50 per cent of personnel work in the regions and 50 per cent at Headquarters.

## BENEFICIARIES

The public at large and the environment are protected from potentially dangerous commercial chemicals.

Client groups include various industry sectors and associations involved with and/or using hazardous chemicals as well as those involved with pesticides, motor gasoline additives and other chemical-based products.

Recipients of services include Agriculture Canada and provincial ministries of health, environment and agriculture, Transport Canada (Transportation of Dangerous Goods), External Affairs (participation in various treaty developments, etc.).

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

None carried out to date. This is a program resulting from a major re-organization of Environmental Protection programs in March 1983.

## OBSERVATIONS AND ASSESSMENT

The objective for the program is clear, appropriate and achievable.

The assessment of 250 to 450 new chemicals and the analysis of use patterns for some specific existing chemicals in what can be a "complex and time-consuming" procedure would appear to be a demanding task for the 63 person-years in the program.

Because of the confidential nature of the business information submitted to this group, the maintenance of this confidentiality is critical. The Commercial Chemicals Branch has an excellent reputation in this regard.

All the stakeholders interfacing with this program (with the exception of Agriculture Canada) spoke favourably about the relationship and the quality of CCB's contribution to their activity. The Agriculture study team, in reviewing the pesticide evaluation component of the program, criticized the length of time that CCB was taking to process pesticide evaluations and the resources that it is applying to this part of its responsibility.

The problem centres around the response time for CCB's assessments relative to Agriculture's increased thrust to shorten the time to assess and register pesticides. Their concern was not with the quality of the work performed by the Branch.

Agriculture Canada's position is that CCB has an abnormally slow turn-around time and has not responded to its request to reduce this turn-around time. CCB's position is that it is responding, but is unable to adjust its resources to meet the changed time demand and workload increase. In view of the importance of pesticide use in terms of both economic and social concerns, this planning void is unacceptable.

The Environmental Contaminants Act under which new chemicals must be reported is currently being amended to address identified deficiencies in terms of: Ministerial discretion; minimum required data; notification of importing countries on restricted materials; and the preparation of chemical inventories. These amendments are currently the subject of public consultation, and it is proposed to deal with them through a more detailed consensus seeking process among stakeholders.

While there are differences on the specifics of these amendments, interviews indicated strong support for amending the Act and strong support for the consultation process.

Two common observations about the program were:

a. that since the proclamation of the Environmental Contaminants Act of 1976, only five groups of chemicals have been placed on the restricted list. It was observed that this may imply that this is not a high output for the Branch; and

b. that systems which share neither mandates nor responsibilities introduce limiting factors in terms of checks and balances, towards increasing the number of restricted chemicals. (As an example, while Environment Canada may be concerned about the environmental impact of a pesticide, Agriculture Canada has the responsibility for ensuring pesticides are available to meet its responsibility of increasing yields and reducing crop loss due to insect infestation.)

Depending on the perspective of the stakeholder interviewed, these observations were seen by some as valid and by others as invalid. On balance it is our assessment that the system contains adequate mechanisms to ensure that all factors are considered, leading to responsible decisions. No evidence exists to suggest that irresponsible decisions have been made. During the past nine years some 2,700 submissions have been processed by the branch, with approximately 100 evaluations presented for review to the Interdepartmental Evaluation Committee.

**OPTIONS**

The study team recommends to the Task Force that the government consider the following measures:

a. The program be maintained as an important and integrated part of the Toxic Chemicals Management Program, subject to the recommendations made by the DOE Self Evaluation Team on that program.

b. The high standard that exists in terms of protecting trade secrets and confidential business information from unauthorized disclosure be maintained.

c. Address, as a priority, the resolution of the existing conflict with Agriculture Canada with regard to pesticide registration. This resolution should identify agreed upon workloads, expected performance, commitment of resources and the establishment of a mechanism, at the ministerial level, to ensure stewardship. This should be resolved within 60 days.

d. Consultation with provinces and OGDs be initiated immediately to identify regulatory enforcement activities that are duplicative, or that can be assumed more efficiently by the provinces or OGDs. This review should be completed by January 1, 1986, with implementation before year-end 1986.

e. The proposed consensus-seeking consultative process dealing with amendments to the Environmental Contaminants Act is strongly endorsed and fully implemented.

f. In view of the fact that the major elements of the program have been in effect since 1976, and no evaluations have been carried out, it is recommended that such an evaluation be conducted by the department before March 1986.

# WASTE MANAGEMENT

## OBJECTIVE

To prevent, control and mitigate environmental problems associated with hazardous wastes by promoting resource and energy conservation practices in the waste management field and by developing environmental emergencies contingency plans, countermeasures equipment/techniques, prevention measures and spill preparedness capabilities, including monitoring of response.

## DEFINITION

Wastes in the context of the waste management program is limited to wastes transferred from sites, with emphasis on hazardous wastes.

## AUTHORITY

A. Administered by DOE
   - Government Organization Act (1979)
   - Ocean Dumping Control Act (1974/75)
   - Fisheries Act (Section 33) (1970)
   - Solid Waste Management (Cabinet Directive, 1973)
   - Environmental Emergencies Activities (Cabinet Directive, 1973)

B. Administered by Others
   - Transportation of Dangerous Goods Act (1980)
   - Canada Shipping Act (R.S. 1970, c. S-9)
   - Oil and Gas Production and Conservation Act (R.S. 1970, c. O-4)
   - Northern Inland Waters Act (R.S. 1970, s.1, c. 28)

## DESCRIPTION

Waste Management activities in support of other government departments, the provinces and industry include:

a. identification, characterization and assessment of industrial and institutional hazardous wastes;
b. development of technical manuals, technological assessment, advice and consultation in the waste management areas;
c. provision of waste reduction, reuse and recycling advice;

d. provision of advice on international concerns with waste;
e. provision of guidelines, codes and technical advice to ensure that wastes from federal activities are disposed of in an environmentally acceptable manner;
f. development of regulations to control the movement of hazardous wastes in support of the Transportation of Dangerous Goods Act (TDGA) administered by Transport Canada;
g. contingency planning and response to environmental emergencies; and
h. control of the dumping of wastes in the oceans through a permit system.

Although the management of wastes is primarily a provincial responsibility, there is a need to provide for information flow between provincial authorities and to encourage the development of co-operative mechanisms for the transfer of wastes between provinces and between countries. There is a Memorandum of Understanding on the Transportation of Dangerous Goods Act (TDGA) between Transport Canada and Environment Canada and a proposed agreement between Canada and the United States on transboundary movement of hazardous wastes.

Most program activities are conducted in close consultation and co-operation with other federal government departments, provinces, territories and industry. A federal/provincial/territorial committee on waste management was established in 1980, to ensure close co-ordination of activities at the national level.

Funding for this program is provided through the budget of Environment Canada.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 3,078 | 2,088 | 2,088 | 2,088 |
| Other O&M | 1,711 | 954 | 974 | 974 |
| Grants and Contributions | 5 | --- | --- | --- |
| Capital | 12 | 10 | 10 | 10 |
| **TOTAL** | 4,806 | 3,052 | 3,072 | 3,072 |
| Person-years | 69 | 47 | 47 | 47 |

**1984-85 Total Resource Distribution by Regions and Headquarters**

| | HQ | Atlantic | Quebec | Ontario | W&N | Pacific | Total Regions |
|---|---|---|---|---|---|---|---|
| PYs | 21 | 12 | 5 | 13 | 6 | 11.6 | 47.6 |
| $ | 1634 | 697 | 483 | 914 | 440 | 638 | 3172 |

## BENEFICIARIES

The public at large by implementing uniform national regulations under the TDGA dealing with interprovincial/international movements of hazardous wastes such as a uniform manifest system for tracking hazardous wastes from "cradle to grave" and uniform criteria for classifying hazardous wastes.

Provincial waste management and emergency programs, other federal government departments which rely on expert advice and assistance on waste disposal and/or emergency prevention/response aspects, Canada's recycling and spill countermeasures industries, Canada's waste transport and disposal industries and marine/fishery industries.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

The Environmental Emergencies (EE) component of this program underwent formal evaluation in 1981. The evaluation concluded that the Environmental Emergencies program was sound and supported by clients. Recommendations were made for additional efforts towards chemical spills, spill prevention, risk analysis and contingency planning. The EPS reorganization in 1983 resulted in the waste management program retaining responsibility for the environmental emergency program's overall direction and co-ordination, contingency planning, data analysis and alerting/reporting/ response co-ordination. The research and development function as well as training were assigned to Technical Services and spill prevention was assigned to Industrial Programs. Recommendations made are being progressively addressed/implemented, particularly as they relate to providing greater emphasis on chemical spills, spill prevention and risk analysis.

The National Waste Management Program was evaluated during November/December 1984. The program was downsized (reduced by 9 pys and $2.2 million) by discontinuing activities which could more appropriately and effectively be implemented by the provinces. Activities related to hazardous wastes, TDGA, recycling and federal waste disposal sites were transferred to Industrial Programs because of its existing multi-media responsibilities. Responsibility for the Ocean Dumping Control Act and environmental emergencies functions were in turn transferred to Program Management Branch on an interim basis.

## OBSERVATIONS AND ASSESSMENT

### A. EMERGENCY RESPONSES

The emergency response activity over the past several years has resulted in well developed plans to deal with the prevention and clean-up of oil spills; these plans have been well accepted and integrated with provincial and industry plans.

The challenge now faced by the emergency response organization is to move into the total area of environmental emergencies including toxic chemical emergencies. In this new thrust, those interviewed have identified three major areas of concern as follows:

a. The need for clearly defined protocols which would identify and assign responsibility for leadership and support in dealing with a wide variety of environmental emergencies.

b. The requirement for the training of personnel dealing with these emergencies to ensure that their skills are consistent with their assigned responsibility and that they are provided with the appropriate equipment to deal with specific emergencies.

c. The liability incurred when private interests engage in emergency responses either directly or through advice provided when assisting government agencies.

In pursuing the above, the existing responsibilities of provinces in the areas of human health and environmental concerns must be respected and accommodated.

## B. WASTE MANAGEMENT

All stakeholders interviewed identified waste management, in all its forms, as a priority issue facing Canada both now and in the future.

Waste management is an area where the development of new and improved technology is widespread and where the need for adaptation and transfer is required.

The overall concern in the area of waste management presents an expanding opportunity for shared funding of basic research, technology development and for operating technical support.

The recent assignment of waste management responsibilities to Industrial Programs has helped focus attention on the activities that could and should be carried out in this area. The resources identified appear adequate for these activities.

There is a strong agreement among stakeholders that there continues to be a requirement for a federal presence in the waste management area in support of provincial activities centering around the following broad areas:

> the establishment of national waste management guidelines and codes of practice;
>
> continued technical support and research on a jointly shared basis with provincial governments and with non-governmental interests (private sector) in waste reduction, recycling and destruction;
>
> the assumption of a facilitating role in promoting the establishment of common multi-province, regional waste disposal facilities; and
>
> maintaining a body of expertise and support for initiatives (such as recycling), which at this time do not appear to have been assumed by any other group and which are more efficiently maintained on a national basis.

Given the size and scope of federal activities (departments and agencies), there is a requirement to maintain adequate expertise of both HQ and the regions in support of these varied activities on an ongoing basis. This involvement, recognizing individual operating department responsibilities, should be focussed on general guideline development and on the provision of expert technical support (including research) directed towards specific problem resolution.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

### A. EMERGENCY RESPONSES

Environment Canada take the lead role in developing, jointly with each province or territory and the relevant OGDs, emergency response protocols covering a wide range of possible environmental incidents. This should clearly set out responsibilities, establish the appropriate skill and training requirements, and specify the equipment required in each circumstance. This is a significant recommendation and all participants must be encouraged to participate.

The protocols take the form of signed agreements between the responsible parties and take into account:

- intra-provincial responsibilities;
- the emergency response hierarchy already existing in the Canada Emergency Planning Network; and
- the capabilities and responsibilities that exist in the private sector.

In addition, the agreements must resolve the questions surrounding the liability of third parties that volunteer assistance or provide related services.

The Program Management Branch role and responsibility statement be revised to reflect the newly assigned responsibility for Emergency Responses which extend beyond federal activities.

A process be developed and maintained to collect and analyze, after the fact, environmental emergency response information from municipalities, provinces, territories and other countries, so that sufficient information is available relative to specific incidents to determine trends and extract knowledge for improving emergency responses.

## B. WASTE MANAGEMENT

The waste management component of the Industrial Program be focused on:

a. the support of provincial activities in terms of:

   - development of guidelines;
   - provision of technical support;
   - fostering discussions on the establishment of joint regional waste management/disposal facilities;
   - maintenance of expertise in areas which have national application; and
   - developing common data base, waste criteria, consistent laboratory protocols and compatible way bill systems.

b. the support of federal government activities in terms of:

   - waste regulation and guideline development; and
   - specific joint problem solving.

c. the maintenance of an expertise center to accomplish the support activities and monitor external technology developments, as well as the establishment of an active process to transfer this expertise and technology.

d. the carrying out of research in support of OGDs, provinces and the private sector on a selective basis and by listing of priority and aggressively explore opportunities for the joint funding of these initiatives.

The objective statement for Industrial Programs be expanded to reflect the added responsibilities taken over from the Waste Management Program.

## WATER CONSERVATION PROGRAMS

### Background

The programs covered by this overview include: Flood Damage Reduction, Canada/US and Interjurisdictional Water Management, Water Management Data, and Water Management Research. These programs fall within DOE's legislative mandate under the Government Organization Act, Environmental Contaminants Act, Canada Water Act, Fisheries Act and International Rivers Improvement Act. Other legislation such as the Boundary Waters Treaty Act, and international agreements and memoranda such as the Great Lakes Water Quality Agreement and the Canada/US Memorandum of Intent on Acid Rain provide direction and substance to DOE's water programs.

The total DOE budget for the four water programs, as currently budgeted, is approximately $110 million and 1,069 person-years in Fiscal Year 1984/85. The budget for Fiscal Year 1987/88 is projected to be $89 million and 1,119 person-years. The major budget reduction is due to the completion of the sewage treatment plant funding program between Canada and Ontario relating to obligations under the Canada/US Great Lakes Water Quality Agreement. The only significant revenues generated are those recovered from the provinces under the federal/provincial water quantity and quality agreements for hydrometric data collection. Total revenue generation is expected to rise from approximately $4 million in Fiscal Year 1984/85 to $6 million in Fiscal Year 1987/88.

The scope of the water programs encompasses DOE support of two major research institutes (National Water Research Institute (NWRI), National Hydrology Research Institute (NHRI)), co-operative federal/provincial water quantity and water quality networks (under negotiation), federal/provincial water management agreements on flood damage reduction and a number of issue-specific agreements, as well as major international co-operative programs and agreements such as the Canada/U.S. Great Lakes Water Quality Agreement (1978).

The study team's evaluation of water programs and its recommendations must be sensitive to the major effort over the past 18 months of the Inquiry on Federal Water Policy under the Chairmanship of Dr. Peter Pearse. The final recommendations of the Pearse Inquiry were not available before completion of the study team evaluation and may therefore modify or supplement the conclusions reached below.

## Summary Assessment and Key Directions

The study team makes the basic observation that water is a provincial resource which is usually subject to provincial management and control. Federal responsibilities and authorities arise when international interests are at stake, when federal lands or undertakings are involved, or when federal/provincial co-operative agreements are developed. In addition, domestic water quantity and quality issues often arise which directly affect federal interests such as fisheries, agriculture and navigation.

A key issue of interest to the study team is the present extent of federal resource commitments to domestic water quantity and quality programs relative to the federal interests which are being served. The federal government has traditionally operated a national hydrometric monitoring station network to measure water quantity, and has developed federal/provincial agreements on resource and work-sharing. More recently, water quality monitoring agreements have been under negotiation with provinces, and a sediment sampling network is under development. The primary clients for this information are provincial and private sector interests; the federal government, while assuming most of the costs, probably makes less use of the data than they do. This may be appropriate, but the users should have a greater control over the direction and establishment of priorities for water data collection and research and probably greater responsibility for its support. One way of achieving this would be to incorporate a new body (which could for example, be a joint federal/provincial Crown Corporation) which would be responsible for all water programs currently conducted by the federal government. The principle users in the federal government, the provinces and in private organizations should become the board of directors. One of their early tasks would be to decide on the appropriate level of funding required to support current water programs. The federal representative would attempt to identify the core function; data and research that are in the national interest would be funded by the federal government. Beyond that core area, additional programs, research and data should be those that provinces or NGOs would be willing to support financially.

The study team has made a number of proposals relating to program management, especially for water research, and to streamlining and consolidating data management activities. Some areas of international and federal/provincial activity require greater policy direction; some opportunities for increased contracting-out and cost-recovery have been identified.

The study team recommends to the Task Force that the government consider the following options:

## A. Management Issues

**Streamline and consolidate the water quantity and quality monitoring networks with meteorological networks to the extent possible.**

Streamlining would involve the transfer of the snow survey activities of the Inland Waters Directorate to the Atmospheric Environment Service and the co-location where feasible of hydrometric and meteorological stations to achieve economies in sample collection and station maintenance work. The sediment sampling program would be reviewed and a policy developed for cost-recovery.

**Complete the current review of privatization and contracting-out of water quantity and quality data sample collection and analysis, and implement a program which actively encourages proposals from the non-government sector for the provision of these services.**

The study team found that opportunities exist in the water program area for greater private sector involvement. For example, it would be possible to contract-out the analytical needs of the water quality network which requires some 500,000 tests annually. Previous departmental reviews have identified some drawbacks associated with contracting out water quantity surveys i.e., unreliable data collection, costs of contracting-out may exceed in-house collection. The study team is confident that in the long term, these potential problems can be overcome and result in reduced resource requirements at the departmental level. The department has absorbed the entire overhead costs of data storage, retrieval and dissemination, since these costs are not included in the federal/provincial cost-sharing agreements. The issue of cost recovery of federal overhead expenses in shared-cost programs, such as the monitoring networks, is addressed in another overview paper.

**Establish a Water Management Research Committee composed of government, university, private sector and other non-governmental experts to advise the federal government on research needs and priorities. The Committee should also assume an advisory role in managing a new contracting-out fund which will constitute 15 per cent of the budgets of NWRI and NHRI within 5 years. This fund should be managed strategically to develop centres of excellence at universities and/or co-operative government/university/private sector institutions. The Committee would report to the Assistant Deputy Minister of the Environmental Conservation Service.**

The study team identified a problem in the extent to which internal resource problems and constraints within the federal government research institutes have been dealt with by redirecting the funding used for contracting-out and other support to non-federal research areas. This finding, coupled with some internal research management problems within DOE and with implementation of the federal government's clear policy statement on contracting-out, suggests the need for targets to be set for contracting-out and for a committee to be formed which is representative of a wide range of research interests. In addition, a human resources management and development problem is emerging within the research area. This calls for a more aggressive program of exchanging researchers among the government, university and private sectors, and developing new talent through university programs.

## B. International Commitments

**In consultation with the United States, should explore the desirability of directing a reference to the International Joint Commission (IJC) to study the relationship between water quality and groundwater contamination in the Great Lakes Basin. The Canadian/U.S. governments should involve the IJC in the acid rain issue, pertinent to both governments under the Boundary Waters Treaty.**

The IJC is a unique institutional entity which enjoys a high level of public confidence on environmental matters. The Great Lakes Basin is home to nearly 40 million Canadian and U.S. citizens. Contamination of the Great Lakes with toxic chemicals is clearly established and has evoked widespread public concern. It is suspected that leakage from hazardous waste disposal sites is one of the major pathways for toxic chemicals entering the lakes. No comprehensive inventory exists of the contribution of groundwater to contamination of the lakes, nor have standard sampling protocols and modelling techniques been developed. Clean-up of known hazardous waste dump sites will cost hundreds of millions of dollars. The IJC is the recognized body for undertaking comprehensive, unbiased reviews of boundary water issues, and providing advice to the governments.

The IJC's public stature and record of achievement on water issues also suggests that a positive contribution could be made by this body to the acid rain issue. Consideration should be given to directing a reference on Canada/U.S. acid rain concerns to the IJC. The initial steps for the development of a reference proposal could be undertaken by the Envoys on acid rain for submission to their respective governments.

**Develop, for Cabinet consideration, a clearer federal policy statement on large scale water export and diversion.**

Continental water diversion proposals are being debated with greater frequency and force than in the past. These diversions could have extensive impacts on the environment, including climate, and on the socio-economic interests of Canadians. Past Canadian positions have been consistently against large scale water export. The extent to which water is underpriced is only now starting to become apparent but its economic value will undoubtedly grow rapidly as existing sources are depleted or contaminated. Increased pressure will likely be exerted upon Canada to divert water to the U.S. The Pearse Inquiry has considered this issue and will also be making recommendations which should be taken into account in developing the federal policy on water export and diversions.

## C. Federal/Provincial Commitments

**Develop a clear policy statement on the Department's role and range of activities related to the interprovincial impacts of: water supply/demand imbalances, interbasin transfers of water, and flows and quality of groundwater. Specific federal/provincial agreements should be developed to provide structure and guidance to co-operative efforts consistent with the new federal policy.**

Present legal and constitutional provisions are inadequate to deal with interprovincial impacts on water regimes. Increasingly, water-related projects within provinces have implications beyond the province in which they are sited. Unlike the case of international boundary waters, which are managed within the parameters defined by the Boundary Waters Treaty, no similar provision exists to guide interprovincial water management. It would be appropriate for the federal government to assume a leadership role in defining basic approaches to be followed in the area of interprovincial water impacts.

A number of federal departments including Environment, Regional Industrial Expansion and Agriculture, are involved in a wide array of water related projects for a variety of different and sometimes conflicting reasons. The need for sorting out the federal role is clear, and will be addressed by the Pearse Inquiry. The study team notes the need for comprehensive policy guidance as a prerequisite to proper federal program development and accountability.

> **Terminate the flood mapping program after five years and within that time-frame ensure that new or renewed flood mapping agreements stipulate that designation of flood risk areas by federal and provincial governments must occur. No new structural agreements on dykes and dams should be undertaken.**

The main federal objective for the federal/provincial Flood Damage Reduction Agreements is to minimize federal disaster relief payments. The Flood Damage Reduction Program has a favourable cost-benefit ratio, but this ratio assumes that designation will occur. This does not always occur due to provincial and municipal desire to maintain control over development of flood-prone lands. Substantial savings to the DOE budget would occur if the federal government phased out the Flood Damage Reduction Program as agreements terminate or as it becomes apparent that the provinces will not designate the flood-prone lands to restrict development. In particular, the federal government should withdraw its support of costly structural measures (e.g. dams, dykes). However, the departmental savings would perhaps be more than neutralized by increased federal disaster assistance payments.

# WATER MANAGEMENT DATA

## OBJECTIVES

To provide comprehensive, accurate and timely data, information and advice on the quantity and quality of Canada's inland waters.

## AUTHORITY

Key: Government Organization Act (1979)
Canada Water Act (1971)
Boundary Waters Treaty Act (1909)

Other: Fisheries Act (R.S. 1970, c. F-14)

## DESCRIPTION

The federal government has been involved in the collection of water quantity data since 1894. Today, the Water Survey of Canada (WSC) of the Inland Waters Directorate (IWD) of DOE collects, analyzes and distributes data on water levels, river discharge and sediments. Water quantity data is collected at nearly 3,500 locations across Canada. The provinces contribute approximately $4.5 million to the operating costs of 1,700 stations through federal/provincial cost-sharing agreements.

Stations are designated as federal, federal/provincial or provincial. The designation is based on prime need and determines financial responsibility. The federal government pays 100 per cent of the cost of operation and construction of stations designated federal, 50 per cent of specified costs of federal-provincial and none of the costs designated provincial. Guidelines for designation of stations and their operation have been in use since 1978. A similar agreement exists with the Department of Indian Affairs and Northern Development for Yukon and the Northwest Territories.

Sediment data is collected at over 100 sites. Snow survey data is collected at about 100 sites. Under this program there are co-operative agreements with the Canadian Hydrographic Service to collect data on water levels along the east and west coasts, the Arctic Coast, the St. Lawrence River and the Great Lakes.

The WSC is planning to install 350 automated data collection platforms (Canadian manufactured devices to transmit water data from remote sites via satellite communication) at remote locations by 1988. To date, 90 such platforms have been installed.

To monitor water quality, the WSC collects, analyzes and distributes water quality data (500,000 tests annually), from 50,000 samples taken at 645 locations across Canada. Cost-shared agreements are being negotiated with the provinces. Quebec was the first to sign and four more provinces are expected to sign in 1985/86. These agreements will increase the total number of sampling sites to 1850 across Canada, ensure uniform standards in sampling and analysis at both the federal and provincial level and share the costs between federal and provincial governments. This program was approved in 1982 and will be fully implemented by 1986/87.

Data handbooks along with some 40 analysis reports are distributed annually to 1,000 client agencies and managers. In addition, some 6,000 requests for current data and/or analyses of historical data are responded to annually. This unbroken record is reflected in forty years of water quality data being accessible in computer data banks and over 80 years of water quantity data which are indirectly accessible.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 17,638 | 20,439 | 20,916 | 20,624 |
| Other O&M | 11,264 | 11,843 | 12,739 | 12,876 |
| Grants and Contributions | 999 | 990 | 990 | 990 |
| Capital | 4,717 | 4,978 | 4,732 | 4,595 |
| **TOTAL** | 34,618 | 38,250 | 39,377* | 39,085 |
| Revenues | 4,140 | 5,610 | 5,649 | 5,728 |
| Person-years | 497 | 525 | 544* | 544 |

* The increase in resources is as a result of the implementation of the new co-operative federal provincial water quality data collection activities.

## BENEFICIARIES

Provinces, territories and municipalities for potable water supplies, infrastructure design and flood forecasting; agriculture sector for irrigation, industry for water supplies, infrastructure design, power production and navigation; and all agencies involved in the recreation industry. The data are also important to those involved in fish management and oceanography.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

A departmental program evaluation in 1979/80 reported it to be economic, efficient, and effective. A Comprehensive Audit undertaken by the Auditor General's office in 1984 found that the system was functioning satisfactorily and that it was well-managed.

A study by Acres in 1977 showed a favorable cost-benefit ratio of water quantity data.

## OBSERVATIONS

Canada's economic well-being is dependent on an abundant supply of good quality water. In many areas, the quantity and/or quality of water is a critical limiting factor for development. It plays a major role in the development and management of agriculture, energy, transportation, fisheries, forestry, mining, recreation and tourism. Water is essential for most industrial, municipal and rural activities. Water is therefore, an essential resource which requires proper management and to effect good management, water quantity data is essential. One of the major strengths of the Water Survey of Canada is that it is a stable organization with a long record of dependable service in data collection and analyses, and reliability and timeliness of data dissemination to clients.

Federal, provincial and territorial co-ordination of the program is extensive. Program administrators representing all the parties meet annually, and co-ordinating committees in each province and territory meet at least annually to plan and review the hydrometric network. Comprehensive guidelines exist for the establishment and operation of water quantity survey stations.

A program to install automated data collection platforms is being implemented and this will enable more economic data collection from remote sites. It will be necessary to ensure sustained reliability of operation to prevent loss of valuable data.

Some concern has been expressed that water quantity estimates in the North were understated. This is due in part to the limited water quantity data network but also to other data limitations such as climate. Better estimates could be obtained through more consultation between clients/users and those involved in the related data networks.

Contracting-out of the basic data collection activity was considered in 1980, when a pilot project for Northern Ontario was proposed but not pursued because of: (i) a similar U.S. study showing satisfactory contractor performance but 55 per cent greater cost and (ii) a change in resource allocation priorities. Contracting-out or privatization of a portion of this activity is now under review again.

The Canadian Hydrographic Service (CHS) is interested in water level data for those areas for which it prepares charts and notices for navigation. A Memorandum of Understanding exists between the Environmental Conservation Service and the Ocean Science and Surveys Service of the Department of Fisheries and Oceans which covers the co-operative activities and cost-sharing on the east and west coasts, the Arctic, the St. Lawrence River and the Great Lakes. CHS maintains the responsibility for data management. Regular meetings are held to review the needs of both programs.

Groundwater is a resource of national and international significance but data regarding the quantity, quality and transboundary movement of groundwater is inadequate.

## ASSESSMENT

In its interim report Hearing about Water, the Pearse Inquiry on Federal Water Policy reported "the single most widespread anxiety Canadians have about their water resources is its quality". In recognition of the overlapping and interconnected constitutional authority of the federal and provincial governments on water quality matters, DOE in January 1982 received Cabinet approval to negotiate and enter into agreements with the provinces for the collection of water quality data. To date, only Quebec has signed such an agreement. Such agreements will result in improved federal provincial relations and should be pursued with some urgency.

There is limited co-operation with the Atmospheric Environment Service (AES) to integrate meteorological stations with the water quantity stations. There are benefits to having a common data base. There should be more integrated planning to develop such joint sites. Water quality stations should also be considered as part of such an integration of stations.

Under this program snow survey data has been collected since 1922. As of 1982/83, there were 99 snow courses operated by the Water Survey of Canada (WSC). AES also has a snow survey network and operated 130 snow courses in 1982/83. Snow survey data is of particular value in estimating spring run-off potential which is of great interest in water quantity data collection programs. The data is also of interest in snow load calculations, livestock and wildlife survival, agricultural productivity, etc. By the end of next year the WSC will only have nine stations. AES publishes the Snow Cover data which is an annual summary of snow course (depth, water equivalent) observations from some 1,300 sites across Canada. Nineteen different agencies contribute data to the publication. There is some duplication of effort and an opportunity to consolidate and streamline the direction and co-ordination of snow data activities. AES is an appropriate service to assume this responsibility.

Over ten per cent of the Canadian population rely on ground water for drinking water. There is also extensive use of ground water by industry and agriculture. Ground water is a provincial resource but must be considered as part of the total water budget in any water management strategy. In many areas, ground water is being threatened by past practices of waste disposal on land or through deep well injection. The federal government has a direct interest in those areas where ground water problems exist along the Canada-U.S. border and under federal lands. Very little information is available on the magnitude of this resource and co-operative attention by the provinces and federal government is required.

Under this program sediment samples are collected and analyzed from over 100 sites across Canada. Some samples are collected for establishing baseline data (e.g., north-flowing rivers) while others are collected in response to needs of clients who may be provinces, hydro utilities and consultants. While it is recognized that sediment data is useful in the interests of fish habitat protection, dredging, water quality assessment, etc., there was no clear policy or mandate identifiable nor any rationale for the establishment and operation of sediment stations. A review is currently underway to better focus the present sediment program.

A recent survey has revealed there are about 600-700 users of the annual water quantity data. About 40 per cent of the requests come from governments and the remainder from the private sector. There is currently no cost-recovery for the information provided. Insofar as joint agreements exist for the collection of the data it would not be appropriate to cost-recover from governments, but there is an opportunity to recover these costs from the private sector.

There are over 500 person-years committed to carry out this program; 20 per cent are at headquarters and the rest are in the regions. The headquarters role is to provide overall management and co-ordination of the program and functional direction to regions, formulate national policies, prepare guidelines and procedures for operation of the networks, archive the data and compile national reports. The major activity occurs in the regions which manage and undertake the data collection activities. At headquarters, with the completion of guides and procedures, there may be some resources which can be freed up. Water quantity and water quality data collection and sampling activities are generally undertaken by separate technicians. In some regions, the same technician has been trained to undertake both activities. Further economies could be achieved by combining these activities through training programs for the technicians to qualify them to satisfy the needs of both networks.

Complete privatization of the water quantity network is a consideration. The study team was advised by consultants familiar with privatization of the hydrometric network in other countries such as South Africa and parts of Australia, that it was not successful. The reasons cited were reluctance of the contractor to release the data and the need for long-term reliability and continuity. Inland

Waters Directorate is currently undertaking a review of current and alternative systems for collection and delivery of water quantity data which may lead to the implementation of a new system. There is an opportunity to contract out the analytical needs of the water quality network where some 500,000 tests are conducted annually.

Water quantity data is stored in a computer data base called HYDAT. Water quality data is stored in a system called NAQUADAT. Both systems are supported by staff for data inputting, management, analysis and retrieval. There is also an extensive water quality data base for the Great Lakes at the National Water Research Institute in Burlington, Ontario. Opportunities exist to combine some of the infrastructure support and management of these related data bases.

Under the cost-sharing arrangements with the provinces, only the operational costs associated with the water quantity stations are involved. These include salaries, field expenses, computer costs, leases, aircraft rentals, depreciation, etc. They do not include the management costs for the program. For example, cost-sharing in 1982/83 was as follows:

**Operating costs (millions of dollars)**

| | |
|---|---|
| Federal | 5.52 |
| Provinces and Territories | 4.63 |
| **TOTAL** | 10.15 |

**Management cost (millions of dollars)**

| | |
|---|---|
| Federal | 8.72 |
| Provinces | 0.00 |
| **TOTAL PROGRAM** | 18.87 |

We feel that a portion of the program's management costs which include co-ordination, data collection, archiving and dissemination, should also be cost-recovered from the provinces.

The federal/provincial cost-sharing agreements for the operating costs of this program include salaries but not the person-years which are all federal. This creates an exaggerated impression of the federal program since there is no credit or recovery for the person-years (around 200) in support of the provincial share of the program.

**OPTIONS**

The study team recommends to the Task Force that the government consider the following measures:

a. The program continue because of its long record of unbroken water quantity and quality data, the national importance of water as a vital resource and good federal/provincial co-operation. However, opportunities exist for improvement, streamlining, consolidation, cost recovery and contracting-out.

   - undertake immediately, the planning necessary to consolidate water quantity, water quality and meteorological stations to the extent possible;
   - the Inland Waters Directorate complete and implement, as soon as possible, a program to train technicians to collect both water quantity data and water quality samples in all regions;
   - transfer the snow survey activities to AES by April 1, 1986;
   - implement immediately, full cost-recovery from the private sector for water quantity and quality data;
   - complete the review of the sediment sampling program and develop, in co-operation with the provinces and clients, a policy for the program with provision for cost recovery by April 1, 1986;
   - the Inland Waters Directorate undertake as part of its current review of privatization or contracting-out not only the quantity, but also the data quality collection and sample analysis activities. This current review should include a pilot project of a suitable size and timeframe and provisions for an evaluation by clients and stakeholders and for hiring and training of indigenous peoples; and
   - cost-recover a pro-rated portion of the management cost of this program from the provinces.

We estimate that the streamlining and consolidation of activities noted above can result in savings of 30 person-years and $1.5 million. Also, the additional cost-recovery from clients and the provinces could generate an additional $2.0 million.

b. In consultation kwith the provincial governments, develop a federal position on groundwater with particular attention to transboundary concerns.

c. Provide special designation for person-years fully cost-recovered from the provinces or the private sector so that they are not charged against the departmental allocation. This would change the person-years attributed to this program as a federal cost by about 200 person-years.

## WATER MANAGEMENT RESEARCH

### OBJECTIVE

To provide advanced knowledge and apply research to resolve water related problems and issues in Canada, as well as exploit water development opportunities, so as to fully realize the economic and social potential of Canada's water resources.

### AUTHORITY

Key: Government Organization Act (1979)
Canada Water Act (1970)
International Boundary Waters Treaty Act (R.S. 1970, c. I-20)
Environmental Contaminants Act (1974)
Pest Control Products Act (R.S. 1970, c. P-10)
Canada/U.S. Memorandum of Intent (Acid Rain) (1980)
Fisheries Act (R.S. 1970, c. F-14)
Arctic Waters Pollution Prevention Act (R.S. 1970, I, c. 2)

### DESCRIPTION

The research provides information and advice central to the resolution of water-resource-related issues and is carried out primarily on priority areas such as toxic chemicals, acid rain, water quality in the Great Lakes and other river basins, and water supply and demand, particularly in the west.

Current research activities include:

a. Toxic Chemicals: to detect and identify toxic chemicals in surface and groundwater, and to determine their sources, pathways and effects, and human exposure routes, and to provide scientific criteria and analytical methods for establishing an effective monitoring program.
b. Acid Rain: to develop and transfer methodologies to characterize the impact of acid rain on surface and ground water, to validate criteria for the establishment of effective monitoring programs in Canadian waters.
c. Great Lakes Water Quality: under Canada-Ontario Agreements to provide new information and aid surveillance programs aimed at reducing the

discharge of pollutants into the Great Lakes system. Research includes studies of the movement of waters, suspended materials and the distribution of sediments and contaminants as well as the effects on plants, fish and other aquatic life.

d. Nuclear Wastes: to determine the role that surface and ground water systems play in transporting low-level radioactive wastes in the vicinity of mining developments, refineries, uranium and nuclear power plants, and in transporting nuclear fuel wastes out of and away from deeply buried rock waste disposal sites.

e. Water Supply/Demand Imbalances: to develop technologies necessary for dealing with growing water shortages resulting both from increasing use and climatic change, particularly in western Canada, and new approaches for flood damage reduction, and to improve methods for monitoring both water supply and demand.

f. Environmental Impacts: to develop and provide the techniques necessary to support the Environmental Assessment and Review Process, as it relates both to major water developments such as dams and diversions and to the impact of other developments on water resource systems.

Research is vital in the negotiation and implementation of international and federal/provincial agreements and in the provision of technical advice and solutions to economic and social concerns such as water shortages, energy production, potable water supplies, acid rain and the occurrence and pathways of toxic chemicals in the aquatic environment.

This research is carried out mainly at two institutes, the National Water Research Institute (NWRI) at Burlington, Ontario and the National Hydrology Research Institute (NHRI), the latter to be transferred from Ottawa to Saskatoon in 1986. This Water Management Research program provides a reservoir of inter-disciplinary expertise, equipment and data not available elsewhere in Canada or perhaps in the world.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 1984/85 | 1985/86 | 1986/87 | 1987/88 |
|---|---|---|---|---|
| Salaries and Wages | 15,115 | 16,549 | 16,725 | 16,222 |
| Other O&M** | 6,841 | 6,789 | 7,536 | 7,212 |
| Grants and Contributions | 385 | 252 | 252 | 252 |
| Capital | 9,644 | 11,713* | 3,838 | 2,159 |
| **TOTAL** | 31,985 | 35,303 | 28,351 | 25,845 |
| Revenues | -- | -- | -- | -- |
| Person-years | 359 | 360 | 363 | 363 |

* The decrease in capital funds for the 1986/87 year is due to the completion of the NHRI building in Saskatoon.

** Includes cost of maintaining buildings (e.g., Canada Centre for Inland Waters) and equipment.

## BENEFICIARIES

This program ultimately benefits all Canadians in that it supports related programs such as: the Canada/U.S. and Inter-jurisdictional Water Management program; Flood Damage Reduction program; the Water Management Data program; the Toxic Chemicals program; and the LRTAP program.

The major clients for the Water Management Research program are those involved in: the International Joint Commission (IJC) Reference Studies on the Great Lakes; the Canada/US and Canada/Ontario Agreements on Great Lakes Water Quality; ice effects on power production and navigation; erosion of shore lines and harbours; impacts of acid rain and toxic chemicals; potable water supplies and related health effects; water management planning and allocation; pollution control; the managers in the Department of Environment as well as all water related program managers at other levels of federal, provincial and municipal government, particularly those concerned with controlling pollution (the Environmental Protection Service).

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

An A-Base review of this program was carried out in 1977/78. The Inter-departmental Science Advisory Committee and the Inter-departmental Committee on Water currently review and provide guidance for this program.

A recent Auditor General's report stated that "of a sample of research projects that were underway in 1982-83, we found that less than 30 per cent had been used by managers of water". In November 1984 an action plan to deal with the recommendations of the Auditor General's report on water management research was instituted.

## OBSERVATIONS

The program objective does not make explicit reference to technology transfer and to activities related to water conservation. In these respects, it is deficient. Moreover, other documents which attempt to express the objective of the program do not seem to be consistent. This may be a symptom that the objective of the program is not well understood across the portion of Environment Canada responsible for its management.

The issues surrounding water management research within the Canadian and U.S. governments have been well-documented. Central issues for the water managers of this program are:

- definition of priorities and project selection; and
- research emphasis put on the needs of clients and not on the categories of research.

The resolution of these issues is fundamental to the analysis of Water Management Research.

Recently, a number of reports have been published that analyze the Federal Government's research efforts in science and water related issues. They are: DOE's report on Science and Technology, MOSST Report, Wright Report, Johnson Report, Water Inquiry's Reports, Science Advisor's comments as well as a report by the President's Council on Environmental Quality, Report on Long-term Environmental Research and Development. These documents were extensively consulted in developing the information that follows.

## ASSESSMENT

There has been mixed reaction by all levels of management to the Auditor General's report. Criteria for the Auditor General's evaluation were deemed inadequate.

This was due to the fact that there was inadequate communication between managers. However, comments on the findings have ranged from agreement (by senior management) disagreement (by research managers) on the criteria used for evaluation.

For the past two years the Institutes have been undergoing a series of changes and disruptions which have had an effect on management's ability to plan. These include:

a. research budgets which have been eroding somewhat in inflation adjusted dollars;
b. the impact of the Auditor General's report which claimed that only 30 per cent and 15 per cent of research carried out by NWRI and NHRI respectively is utilized by water managers;
c. moving to Saskatoon of NHRI in 1986 and sections of NWRI (Vancouver and Winnipeg) will also be moving to Saskatoon; and
d. a number of changes at senior levels taking place.

The problems with R&D in Water Management Research are as follows:

a. there is no clear mechanism for overall priority setting for Water Management Research;
b. there is no clear agreement among managers and scientists on how best to meet demands for water management research; and
c. program managers have not adopted or applied appropriate criteria for evaluating projects or research proposals.

The problems with defining Water Management Research should be viewed along with the broader problems of maintaining and effectively using science, which in DOE are not primarily problems of resources; they concern the following:

a. attitude, departmental structure, awareness leadership, acceptance of forward-looking responsibility and communication at the senior level; and
b. the focus of our present science on supporting present policies, leaving little to provide a basis for science on which to develop new policies.

A current perception is that NWRI, supposedly a national institution, has concentrated on Great Lakes issues to the detriment of water management issues elsewhere in the country. However, the consensus of the senior managers responsible for NHRI and NWRI is that the Institutes will over time focus on regional issues. This would permit them to be more responsive to issues in their particular region and to improve communications and relations with provinces.

The federal government's role in water management research is essential, in that it supports the only institutions that can act in a leadership role to co-ordinate the institutional and jurisdictional complexities of R&D activities that are required in understanding the implications of water quality and quantity.

A common complaint by the research staff is that they are required to spend too much time on meeting bureaucratic requirements.

Fundamental water management research requires long-term commitment, which the Federal Government has made in supporting the infrastructure of the institutions. Because the infrastructure costs of running the physical facilities are relatively fixed and cannot be significantly reduced, the resources available to support research at NWRI have been affected by recent budget cuts.

An analysis of research trends reveals that:

a. person-years and dollars have generally been maintained, but have shifted in emphasis to meet emerging issues such as toxic chemicals and LRTAP; and
b. the research management "system" has become more complex as new programs on emerging issues are developed which make use of NWRI and NHRI resources but which respond to directions set by program managers outside of Inland Waters Directorate.

Analysis of the trends in the Inland Waters Directorate's research PYs and dollars suggests that:

a. the focus will continue to shift to toxics; and
b. LRTAP commitments will decrease.

The need for water management research is acknowledged; however, the level of commitment is difficult to define because there is no clear federal government commitment of long term fiscal resources to R&D. Considering that the major focus of DOE's work involves R&D, it is a major flaw in the department's ability to deliver its product.

The NRC Program for Industry-Laboratory projects (PILP) was started in 1978. The program's objectives are to transfer technology developed by the Federal Government to industry. To date six NWRI projects have been undertaken. Three have been concluded in technology transfer, but only one may be considered successful in that a resulting commercial product was sold. A total of $335,000 in COPI-PILP funds was invested, as well as 0.6 PYs and $3,600 from NWRI A-base funds. A report on the PILP has been sent to Ottawa to be discussed by the co-ordinators and the Director-General.

Government clients have utilized the hydraulics lab at NWRI with the following results:

a. Work cost recovered from: 13* clients
No cost recovery: 7 clients

* A procedure newly developed by NWRI for the Ontario Ministry of Transportation and Communications has substantially reduced the cost of road drainage in Ontario. Total annual cost savings are $2,813,200. Most clients do not inform NWRI of the economic benefits achieved from the use of their models or laboratory equipment.

Twenty-four private sector clients using NWRI's physical plant has resulted in:

b. Cost recovery from: 17 clients
No cost recovery: 7 clients

No dollar figures were available.

NHRI expenditures were supplemented by resources from other sources, such as AECL, as follows:

| PY | O&M | CAP. |
|---|---|---|
| 11.4 | $483.3K | $137.5K |

The following table illustrates contracting-out for research for the two Institutes:

| Year | O&M | Prof.& Technical Contracts | Percentage |
|---|---|---|---|
| | **Inland Waters Directorate (\$000s)** | | |
| 83/84 | 20592 | 5,552 | 27 |
| 84/85 | 21654 | 5,053 | 23 |
| | **NWRI (\$000s)** | | |
| 83/84 | 4897 | 373 | 7.6 |
| 84/85 | 5279 | 390.5 | 7.4 |
| | **NHRI (\$000s)** | | |
| 83/84 | 1082 | 213* | 20 |
| 84/85 | 1089 | 103* | 9 |

* NHRI scientists are scientific authorities for many other contracts for which financial arrangements are made through other agencies e.g. the Environmental Protection Service and Transport Canada.

With better water management research, DOE could obtain more research output. At present, 7.4 per cent of the NWRI budget is contracted out (i.e., \$390,000). A phased increase of \$50,000-80,000 per annum until a figure of \$800,000 is reached does not appear to be unreasonable, and allows for a period of adjustment to minimize disruptions.

DOE has a responsibility to take a leadership role in developing university and private-sector capabilities. Universities, in particular, are in clear need of further support (i.e., water research subventions total only \$250K per annum -- at one point this was in the area of \$1 million). The \$800,000 contracting-out fund of NWRI -- if managed strategically by a federal/provincial/university/private sector committee as well as through funds from federal granting agencies such as the Natural Sciences and Engineering Research Council of Canada and the National Research Council, could perhaps result in a \$2-3 million per annum strategic management fund which could "significantly" affect the development of non-governmental research capabilities in Canada. This whole process should be bolstered by a formal interchange program between scientists from the various sectors.

The federal government has the opportunity to make an important contribution to improving water management research by:

a. Developing a Water Management Centre and a Water Management Research Committee (WMRC). The need for such a Centre and Committee stems from the problems that have arisen due to the fragmentation of responsibilities for water issues within the federal government. Co-ordination of activities is slow, ineffective, expensive and unresponsive to the Federal Government's needs. There could be across-the-board savings and increased efficiency with more focused efforts. The Water Management Research Committee would also ensure that political considerations would not interfere with R&D. It would be the responsibility of the Water Management Research Committee to develop guidelines on research priorities, levels of research, and to develop criteria by which to judge what the scientists should be doing.

b. Providing adequate funding support to the existing centers of excellence in water research located in Canadian universities.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. A Water Management Research Committee (WMRC) be established in conjunction with a framework of Water Management priorities established by CCREM, that would be responsible for recommending research activities for Water Management Research. The WMRC would be made up of scientists and knowledgeable people from a cross-section of disciplines and government/industry sectors. It would also be responsible for developing criteria for establishing Water Management Research. The Committee should report to the Assistant Deputy Minister of the Environmental Conservation Service.

b. An external management consultant be engaged to examine the past and existing management process in detail and clearly identify problems and recommend remedial measures.

c. The O&M resources to maintain and operate the physical plant at the Canada Centre for Inland Waters be budgeted and accounted for separately from the R&D budget of NWRI.

d. A complete review of the Institutes' (NWRI & NHRI) resources be undertaken before consideration of resource augmentation is contemplated.

e. Contracting-out from NWRI be increased by $50,000-80,000 per year until it reaches $800,000. It is the opinion of the study team that the department should handle its in-house research more effectively, thus obtaining the same value of research effort in terms of departmental mandate while at the same time directing resource savings to outside contractual research i.e., universities and the private sector. The contract dollars should be managed in such a way as to develop Canadian university and private sector capabilities in areas of importance to Environment Canada's mandate.

f. The Water Management Research Committee oversee the management of the NWRI contract fund to ensure that it meets the long-term development needs of the non-governmental sectors, and not managed to meet the short-term operational needs of NWRI. This management process should be supplemented by an interchange process whereby research scientists from all three sectors gain direct working exposure to each other's operations.

g. NWRI undertake a careful review of its existing cost recovery policy and set new schedules and rates which fully reflect the cost to the Institute of providing Water Managment Research services to others. The review should be completed in time to identify specific targets for revenue generation in the forthcoming fiscal year.

## FLOOD DAMAGE REDUCTION

### OBJECTIVE

To reduce future flood damage, loss of life and federal disaster assistance payments.

### AUTHORITY

| | |
|---|---|
| Key: | Government Organization Act (1979)<br>Canada Water Act (1970)<br>International River Improvements Act (1970) |
| Other: | Fisheries Act (1970)<br>Federal Disaster Assistance Program (Emergency Planning Canada)<br>National Housing Act (CMHC) (R.S. 1970, c. N-10)<br>Other Federal Agencies (DRIE, MOT, DPW, etc.) |

### DESCRIPTION

Since 1975, the federal government, in co-operation with provincial governments across Canada, has been implementing the Flood Damage Reduction (FDR) Program, which is designed to deal with reducing the level of potential flood damage. This program is based on the concept of limiting the nature and flow of new investments on the flood plain, supporting compatible development in fringe areas, but discouraging all development from the most vulnerable locations.

To date seven provinces and the Northwest Territories have joined this program. Agreements with Alberta and B.C. are expected. The Yukon has not yet participated and PEI has no conventional flooding problems. A Memorandum of Understanding on Flood Risk Mapping on Indian Reserve Lands was signed by the Ministers of the Environment and Indian Affairs and Northern Development in July, 1976. It differs from other agreements in that only the mapping will be undertaken and carefully tailored to local needs, keeping band members informed at all stages of the mapping project. The budget will be cost-shared by the two federal departments. DOE's share is $150,000 per year.

Under the General Agreement signed when a province joins the program, both governments agree to conduct a flood risk mapping program whereby lands subject to flooding would be clearly defined and designated; they also agree to abide by a number of policies restricting government undertakings and programs in designated flood risk areas. For example, they will neither build nor assist others to build flood-vulnerable structures in such areas. Also, disaster assistance programs will apply only to structures built before the flood-risk areas were designated and, under certain circumstances, to new structures which are flood-proofed. As well, the General Agreement encourages zoning on the basis of flood risk. Where development has taken place in a flood-risk area prior to designation, other means of reducing the flood hazard may be considered. A Steering Committee composed of two federal and provincial officials is appointed to implement the terms of the agreement and provide advice to ministers on lands to be designated.

Accompanying the General Agreement is the Mapping Agreement, which lists the flood-prone areas to be mapped, with costs being shared equally between the federal and provincial governments. It is on the basis of these maps that the Steering Committee will recommend designation of the flood risk areas to which policies outlined in the General Agreement will apply. The Mapping Agreement also calls for a program to inform the public about the purpose of the Flood Damage Reduction Program and to make them aware of the availability of flood risk maps. To date 41 designations of flood risk areas, covering approximately 300 municipalities and 6 million people, have been made.

Where there is a major threat to existing development, where the benefits of flood protection exceed the costs, and where other federal criteria are met, DOE may join with the provinces in cost-shared programs for the construction of dykes and dams.

Expenditure breakdown for the Flood Damage Reduction Program from 1976 to the present is as follows (in 000s of dollars):

| | |
|---|---|
| Flood mapping | $23,815 |
| Reduction studies | 2,140 |
| Forecasting | 2,000 |
| Dykes, dams and other works | 41,009 |
| **TOTAL** | $68,964 |

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 2,008 | 1,702 | 1,462 | 1,426 |
| Other O&M | 502 | 570 | 468 | 506 |
| Grants and Contributions | 7,388 | 5,692 | 5,792 | 5,792 |
| Capital | 15 | 16 | 16 | 16 |
| **TOTAL** | 9,913 | 7,980 | 7,738 | 7,740 |
| Revenues | 50 | 20 | 55 | 55 |
| Person-years | 44 | 39 | 33 | 33 |

**BENEFICIARIES**

The Flood Damage Reduction Program provides long-term benefits for all Canadians. Disaster relief payments from the federal treasury are reduced. Economic and social disruptions as well as personal hardship in the event of flooding are reduced. Canadians who live in the areas that have been flood-mapped are encouraged to take positive steps in co-operation with their municipalities and provinces to improve their situations. Four million Canadians who have had flooding problems of great magnitude are now protected by flood control structures funded under this program. Social and economic benefits of this portion of the program accrue to those individuals and businesses (and government activities) located in the protected areas. To the extent that those same stakeholders would receive disaster relief, all taxpayers benefit economically from the construction activity. (Note: this assumes the existence of a positive cost-benefit analysis prior to construction.)

**POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM**

The 1978 A-base review noted that the program utilized the major portion of the Canada Water Act funds, largely in three major construction projects: in the Fraser Valley, in Southwestern Ontario, and in the Montreal Area. The A-base Review Task Force considered flood risk mapping to be a more economical approach in the long run and recommended that the flood risk mapping component of the program be accelerated as much as possible under federal/provincial agreements. This recommendation was adopted and has been incorporated in the Flood Damage Reduction Program Guidelines.

## ASSESSMENT

The objectives of the program are still valid. There is a significant potential for reduction in the disaster assistance payments from the federal treasury. Compensation for disaster relief paid by federal and provincial governments from 1948 to date, adjusted to 1985 dollars, has been $700 million. Federal Disaster Relief funding is obtained through Emergency Planning Canada based on the following cost-sharing formula:

| Provincial Costs Per Capita Eligible for Sharing | Federal Share |
|---|---|
| First dollar | 0 |
| Second and third dollars | 50% |
| Fourth and fifth dollars | 75% |
| Excess | 90% |

Success of the program can be assessed by outcomes and outputs. Outputs of the program to date consist of 41 communities mapped.

The flood warning component of the program has proven to be the most publicly visible and gives the whole program a higher profile. This part of the program seems to have worked very well and creative ideas on how to promote the program at little cost have been implemented. The greatest benefit accrues to sports fishermen, farmers and other Canadians, who can better plan their activities.

Canada's Flood Damage Reduction Program is recognized internationally as one of the best programs of its kind.

The designation of flood risk areas has proven to be the most contentious portion of the program. While the provinces have appreciated sharing the financial burdens of flood damage reduction, many municipalities have argued against the principle of designation because of the possible reduction in property values.

The federal government will always have to have some involvement in flood control due to the nature of the problem; however, if this program continues to meet its objectives, over time the federal government's involvement should lessen. Depending upon the federal government's continued support for flood damage reduction, such activities as flood forecasting, flood warning, flood-proofing, flood-prone-property acquisition, relocation, and watershed management should keep the federal government involved with flood damage reduction for a number of years. The Flood Damage Reduction Program began in 1976/77 and existing signed agreements end in 1993. Assuming that Alberta, B.C., Yukon and Indian Reserves enter into Phase I of the Program, the total costs of mapping, studies and cost-shared flood forecasting is estimated to be about $28,000,000 (in current dollars) over the remaining eight years.

To date there are no cost recovery plans. In part, this stems from the fact that cost recovery was not included in the present agreements, and they would be too difficult to re-negotiate. Moreover, cost recovery is extremely difficult to apply to programs whose objective is cost avoidance; that is, it is hard to charge someone for not doing something that government advises should not be done. However, mapping information presently provided will require periodic updating. The timing of such updating will vary on a site-specific basis. Government cost recovery related to the updating process should be a future consideration.

Total costs for agreements signed to date for construction of dykes, dams and other works have been estimated at about $41,000,000. While dykes have been of some benefit on the Fraser River, the structural solution for flooding has not been well received by the public, primarily from the socio-environmental perspective. Dykes and dams are costly and only a partial solution to the flooding problem. Decisions to build structures tend to be ad hoc and have political overtones. People tend to develop a false sense of security when a dam is built and do nothing to protect themselves, should flooding occur.

The key to flood warning is good communication links. Provinces are trying to be imaginative in their public information strategies, which has given the program a higher profile and is helping to achieve the program's objectives.

This program is a good example of federal/provincial co-operation and of working towards a clearly defined objective to the benefit of all Canadians.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. There be no new agreements containing provisions for financial support of the structural phases of the program: dams, dykes, flood-proofing, acquisition, relocation and watershed management. These should be phased out at the earliest possible date. Present agreements on structural measures have a total commitment of $27 million through to 1993; thus, a termination of this component of the program will result in an annual estimated savings of $4.5 million per year.

b. A systems plan be developed for the Flood Damage Reduction Program to:

- identify all flood-prone areas where the potential for damage has regional and national significance, and where federal involvement in flood damage avoidance programming can be justified;
- specify the sequence in which the identified flood-prone areas should be mapped and designated, from the federal perspective; and terminate within five years the mapping and designation activity through completion of existing and pending agreements. Also, any mapping agreements or extensions up to the end of the five year time-frame with the provinces should contain the stipulation that six months after mapping has been completed, both levels of government will designate the flood-prone areas; and
- terminate the program upon completion of existing and pending commitments which will free up 33 person-years and $7.7 million.

c. Existing general agreements be amended to include the provision that the federal government's liability for disaster assistance payments will be reduced by 50 per cent from the existing schedule if six months after the mapping is completed the provinces do not formally designate the flood risk areas.

d. The flood warning component continue. This could be included in the Water Management Data Program with input from the Weather Services Program.

e. Other government departments and agencies improve their way of implementing the stipulation that they are not to build or give financial assistance to flood-prone areas.

f. The federal government seek ways to encourage provinces to develop uses for flood-plains such as sewage treatment systems, conversion to attractive nutrient-recycling farms, crop production, golf courses, forest and other uses which can capitalize on the nutrients in our wastewater and provide tertiary waste treatment at the same time.

g. Take a more active role in the development and promotion of information which includes recognition of the socio-economic benefits of users in order to have a greater impact on public and private sector decision-making. (Public information is very important to ensure the proper use of flood damage information. The province is primarily responsible for this function.

# CANADA/U.S. AND
# INTER-JURISDICTIONAL WATER MANAGEMENT

## OBJECTIVES

To resolve international, federal/provincial/territorial and interprovincial water resource problems; and realize inter-jurisdictional water resource opportunities in accordance with national interests.

## AUTHORITY

Constitution Act (1867/1982)
International Boundary Waters Treaty (1909)
International Rivers Improvement Act (1955/70)
Canada Water Act (1970)
Canada/U.S. Great Lakes Water Quality Agreement (1972/78)
Government Organization Act (1979)

## DESCRIPTION

Under this program the Canadian government's concern is with respect to inter-jurisdictional water management in Canada/U.S. boundary waters and in interprovincial waterways. The purpose is to ensure that the water resources of Canada are protected and used for the greatest social and economic benefit of Canadians, striking a balance between the needs of present and future generations.

The legislative base for the federal government's activities in this program area is derived fundamentally from the Constitution Act. The Act divides jurisdiction over water resources between the federal and provincial governments. The federal government has exclusive legislative jurisdiction over international boundary and transboundary waters, navigation and fisheries, and shares jurisdiction with the provinces over agriculture. The federal government may legislate concerning works situated entirely within a province or in two or more provinces if such works are declared by Parliament to the "of significant national interest", e.g., disruption of regional economies by major floods. The provinces are proprietors of water resources within their boundaries and may legislate with respect to domestic and industrial water supply, power development, irrigation, resource-based recreation, pollution abatement, etc.; that is, over all matters of a local or private nature. Given the constitutional framework, the resolution of many water resource issues requires co-operation between the two levels of government. Co-operation proceeds on two main fronts:

Canada/U.S. or international; and
federal/provincial/territorial.

## INTERNATIONAL WATER MANAGEMENT

The long and generally amicable relationship between Canada and the U.S. in dealing with problems and opportunities on boundary and transboundary waters is due to the safeguards embodied in the Boundary Waters Treaty, 1909. The Treaty applies to the Canada/U.S. international boundary from the Atlantic (Bay of Fundy) to the Pacific (Strait of Georgia) and, in the North, along the B.C./Yukon border with Alaska to the Beaufort Sea, a distance of 8,850 km. Some 300 lakes and rivers form part of, or cross the Canada/U.S. boundary. The Treaty sets out rules and principles governing the use and development of water resources of common interest to the two countries. One of the most important provisions of the Treaty is the guarantee that each country has "equal and similar rights" in the use of boundary waters. Another important provision was the establishment of the International Joint Commission (IJC).

The IJC is a permanent unitary co-ordinating body of six members - three Canadian and three American, including co-chairs. The Commission has joint headquarters in Ottawa and Washington, with a bi-national Regional Office in Windsor, Ontario. The latter deals only with matters related to the Great Lakes Water Quality Agreement.

The responsibilities of the IJC include:

a. the exercise of quasi-judicial powers in approving or rejecting applications for use, obstruction or diversion of boundary waters;
b. investigations and studies of specific problems when requested by either government; and
c. making recommendations on matters referred by both governments.

The Commission establishes international joint study, regulatory or advisory boards to carry out its work. Currently there are 21 active IJC Boards. Both the federal and provincial governments support the work of the IJC by contributing staff and resources and participating on IJC co-operative water quality surveillance and monitoring programs to meet international commitments under the Canada/U.S. Great Lakes Water Quality Agreement. Provincial or State objection to particular courses of action are subject to over-ride by the IJC under Section 4 of the Boundary Waters Treaty.

Boundary water issues currently under review include contamination of shared waters, e.g., Garrison Project, Niagara and Flathead Rivers, and apportionment issues such as diversions and consumptive uses of Great Lakes waters.

There has been a shift of emphasis in bilateral water issues away from the joint development (e.g., St. Lawrence Seaway, Columbia River) of past years towards mitigation of environmental impacts under Article IV of the Treaty which prohibits each country from polluting boundary waters to the extent of injury to health or property of the other country.

The International Rivers Improvement Act (1955) provides for regulation of construction and maintenance of works on international rivers (defined as water flowing from any place in Canada to any place outside of Canada), that would alter natural flows at the boundary. Under the Act, proponents of such works are licensed by the federal government or are granted certificates of exemption. To date, 10 licences have been granted (three to Saskatchewan, seven to British Columbia) and 46 certificates of exemption (all in B.C.).

## FEDERAL/PROVINCIAL/TERRITORIAL WATER MANAGEMENT

The Canada Water Act (1970) provides for federal/provincial co-operation and agreements to plan and implement water resource programs. Prior to the Act, the federal role was largely limited to funding without provision for joint planning, e.g., Canada Water Conservation Assistance Act. Most Canada Water Act agreements have been cost-shared by federal and provincial governments. The federal government, usually through Environment Canada, provides work and expertise as well as funding. The planning agreements under the Act are restricted almost entirely to inter-jurisdictional river basins and water courses over which the federal government has some jurisdiction. These agreements can be broken down into two broad categories:

a. basin or water body oriented agreements (e.g., Thompson River; Okanagan Basin); and
b. specific issue-oriented studies for agreements (e.g., St. Lawrence Water Quality Study).

**PROJECTED EXPENDITURES (000s of dollars)**

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries and Wages | 7,240 | 8,044 | 8,284 | 9,151 |
| Other O&M | 5,314 | 6,052 | 6,626 | 5,209 |
| Grants and Contributions | 20,106[1] | 4,873 | 1,835 | 1,835 |
| Capital | 388 | 340 | 333 | 103[3] |
| **TOTAL** | 33,048 | 19,309* ** | 17,078 | 16,298 |
| Revenues | 224 | 148 | 148 | 148 |
| Person-years | 169 | 172* ** | 179[2] | 179 |

| | **Person-years** | **$000** |
|---|---|---|
| * Canada/U.S. | 110 | 9,600 |
| Federal/Provincial/ Territorial | 62 | 9,709 |
| **TOTAL** | 172 | 19,309 |

| | **Person-years** | **$000** |
|---|---|---|
| **HQ | 39% | 64% |
| Regions | 61% | 36% |

**Notes** Grants and Contributions are reported in HQ budget but spent in the Regions.

1. The $15 million reduction between 1984/85 and 1985/86 under Grants and Contributions is due to the completion of the sewerage facilities construction program under the Canada-Ontario Agreement respecting Great Lakes Water Quality. Since it was not possible to complete the construction program by the end of the fiscal year 1984/85 as planned, Treasury Board has been requested to "roll over" $10 million to 1985/86. If approved, the above figures will change accordingly.

2. Person-year increases are for new initiatives associated with the MacKenzie and Yukon Basin studies and the Fraser River Estuary and water conservation studies in the Prairies.

3. Capital costs decline as works under current federal/provincial agreements are completed.

## BENEFICIARIES

Under both international and federal-provincial water management programs, the stakeholders and beneficiaries vary depending upon the inter-jurisdictional basins targeted and the specific objectives of programs undertaken. For example, the international and federal-provincial waterways are regulated to achieve an effective balance among varied interests such as: hydropower, navigation, recreation, shore property and instream uses such as fisheries and habitat protection.

In projects under the IJC, or in arrangements between the Canadian and U.S. federal governments, the focus is to protect Canada's national interests as guaranteed in the Boundary Waters Treaty, e.g., equal and similar use of shared waters and protection from injury to health and property. Maximization of basin-wide net benefits is not pursued in international basins. Each country retains its sovereign right to manage resources to maximize national interests as long as obligations under the Boundary Waters Treaty are met.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

To date no policy reviews, evaluations, or audits have been done on the Boundary Waters Treaty, although specific agreements and projects have been assessed. A DOE A-base review was conducted in 1977/78 resulting in budget reductions for federal/provincial programs. The Canada Water Act has never been reviewed in its entirety. However, an evaluation of the River Basin Planning and Implementation Programs was completed in November 1981. This confirmed and supported a shift from comprehensive river basin planning to more narrowly defined issue specific programs.

In January 1984, the Minister of the Environment established a National Inquiry on Federal Water Policy to review the relevance of existing federal water programs to emerging water issues and needs.

The licensing procedure under the International Rivers Improvement Act is currently being reviewed by the Joint House-Senate Standing Committee on Regulations.

**OBSERVATIONS**

Canada has the world's largest collection of freshwater systems. The river flow is the third largest in the world, after the USSR and Brazil. The Great Lakes account for 90 per cent of North America's freshwater supply. The IJC presides over the most extensive water boundary in the world.

The water issues which arise in relation to the international context are:

a. Transboundary transport of airborne pollutants: pollutants which lead to acid rain and toxics transported by atmospheric pathways have implications for sport and commercial fishery, drinking water, etc.
b. Pollutants discharged into rivers and lakes: this action by industries, communities and agriculture, through the use of chemicals and fertilizers as well as urban run-off, affects the quality of boundary waters.
c. Contamination of groundwater by leakage from toxic waste dumps: the groundwater flows into waters which can contaminate boundary basins as is demonstrated along the Niagara River.
d. Water diversions proposed to relieve water shortage in the U.S.: two-thirds of fresh water in Canada flows to the North. There now exists a number of proposals for the diversion of some of this water supply into the Great Lakes Basin for use in the U.S. The need for Environmental Impact Studies on all aspects of such schemes as the Grand Canal, must be emphasized.
e. Increasing consumptive use of Great Lakes water over the next 50 years by a factor of seven or eight (4,900 CFS to 37,000 CFS): the impact of this on the levels of the Great Lakes and the resultant outflows, is significant. This projection sees the U.S. as responsible for over 80 per cent of the consumption, gaining the attendant economic benefits without compensating Canada for losses associated with the reduced levels.

f. Falling lake levels associated with climate change and increased diversion: when lake levels are high, power generation and navigation benefit while riparian rights are adversely affected through flooding, erosion, etc. When lake levels are low, the economic impact on power generation and navigation is severe. Wetlands habitat also suffers greatly.

Recently, the U.S. Senate Committee on Environment and Public Works voted to eliminate $175 million from the construction grants program for new municipal sewage treatment plants in the eight states bordering the Great Lakes. If, in fact, this reduction takes place, there is concern that some cities bordering on the Great Lakes may not be able to meet U.S. commitments under the Great Lakes Water Quality Agreement.

Since 1970, some 60 federal-provincial programs, relating to basin planning and implementation, have been carried out under the Canada Water Act. The original comprehensive scope of basin planning exercises has been narrowed, and resource levels lowered accordingly, to address more issue specific programs on broad level framework planning. Increasingly, federal/provincial/territorial programs are called upon to address similar kinds of issues as international programs. These include:

- growing water supply/demand imbalance in the Southern Prairies;
- increasing conflict over transboundary water use issues (e.g., downstream effects of Bennett Dam, Mackenzie and Slave Rivers);
- water quality issues (English-Wabigoon, heavy metal contamination); and
- confusion over jurisdictions with respect to interprovincial and federal/provincial water issues.

The present legal and constitutional provisions are inadequate to deal with many of these issues.

There are differences in approach and funding arrangements among federal departments sponsoring water programs. For example, DRIE and Agriculture Canada sponsor economically oriented water programs (ERDA and PFRA)*, funded up to 100 per cent of the cost. The Canada Water Act programs, on the other hand, are more environmentally oriented and funded up to 50 per cent. This results in provinces "shopping around" to get the best deal.

Since 1964, Canada has had a policy opposing large scale water export which has been stated in the House of Commons on a number of occasions. Current developments in Quebec indicate the potential of a major water export scheme.

Should the proposed water diversion to the U.S. gather serious momentum, it may well be referred to the IJC. In such a study, the following points must be considered:

- the wasteful water management practices of the U.S.;
- social, economic, and environmental impacts;
- impact on levels and flows in the Great Lakes;
- availability of sustainable yields; and
- consequences of denying access to Canadian water.

## ASSESSMENT

The objective as stated is indeed valid and will become increasingly more so if, as seems likely, the problems become more apparent and complex.

The IJC is generally regarded as the most successful of all the joint arrangements in the Canada/U.S. relationship, as well as being a model for other nations to follow in their boundary water relationships. The Boundary Waters Treaty provided the IJC with a substantial degree of independence from national political interference, which enables it to keep bi-national concerns to the forefront. Of the 110 subjects referred to the IJC by both governments since 1912, 80 per cent of the subsequent recommendations have been accepted. This is credited to the joint fact-finding procedure of the IJC.

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* ERDA - Economic Regional Development Agreements (DRIE)
PFRA - Prairie Farm Rehabilitation Administration
(Agriculture Canada)

Despite these heartening indications, the many and varied problem areas referred to under Observations are becoming increasingly severe.

There is a need for concerted action by the governments of Canada and the United States to address groundwater conservation issues (depletion and quality concerns) affecting transboundary groundwater resources. Consideration should be given to referring the groundwater issue to the IJC in a formal reference.

The national programs have accelerated the development of technical and management expertise on the part of the federal and especially the provincial governments. For example:

a. increased sophistication in detection and monitoring of toxic contaminants; and
b. broadened range of management options to include non-structural approaches such as water demand management, flood plain management, etc. These approaches result ultimately in reduced costs, benefitting both regional and national accounts.

The Boundary Waters Treaty prohibits each country from polluting boundary waters. In its submission to the Federal Water Inquiry, DOE noted that suggestions have been made that the Treaty be amended to clearly specify what constitutes "injury to health and property", as well as to stipulate remedies for violations. While at first glance this would appear to be a laudable approach, consideration would have to be given to the prospect that it might spark a host of amendments which may not be advantageous to Canada.

While the Canada Water Act resulted in federal-provincial/territorial agreements, since its enactment in 1970, there has been some provincial concern over what is perceived to be federal intrusion, as well as over the fragmentation of programs and their administration. On the other hand, some people in the federal government expressed concern over provincial policies and procedures on the release of data.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. Existing arrangements and mechanisms under the Boundary Waters Treaty be continued until an evaluation is done. The evaluation should be completed by July 1986.

b. Canadian vacancies on the International Joint Commission be filled as expeditiously as possible with Commissioners of appropriate experience, to ensure that the Commission's work is not interrupted.

c. Explore jointly with the U.S. by mid-1986 the desirability of directing a reference to the IJC to study the relationship between Great Lakes Water Quality and groundwater contamination in the Basin. The governments should also explore whether the IJC could make a contribution to resolution of the acid rain issue.

d. Support any IJC initiative to study implications of any U.S. cut-backs in sewage treatment plant grants. If the IJC finds it necessary to request that the U.S. honour its obligations under the Agreement, Canada should should support it through diplomatic channels.

e. Give early consideration to any recommendations in the Pearse and Study Team Reports, dealing with export and diversions, and come forward with a policy statement for Cabinet approval by March 1986.

f. Maintain, at the present level, the resources allocated to the Canada/U.S. component of this program.

g. Maintain the current direction and resource levels of federal/provincial/territorial programs as these already reflect adjustment to changing circumstances. The federal focus should continue shifting to co-operative efforts with the provinces on new interjurisdictional issues such as groundwater management, regional water demand/supply balances and interbasin transfers.

h. Assume a leadership role in developing national approaches, based on the principles of the Boundary Waters Treaty, to deal with emerging federal/provincial/territorial interjurisdictional issues. Taking into consideration the recommendations of the Pearse report, initiate consultations with the provinces on the most effective approach.

i. Encourage the provinces to continue with sewage treatment programs as expeditiously as possible.

j. Taking into account the findings of the Pearse Inquiry, and in conjunction with relevant departments and central agencies initiate a review of mechanisms to co-ordinate federal objectives, with respect to water management programs and standardization of funding approaches, with each province.

k. Contact native people's national organizations, by the end of 1985, concerning the development of procedures to ensure meaningful consultation with native people on water management programs that affect them.

## APPENDIX I

## FEDERAL - PROVINCIAL AGREEMENTS UNDER CANADA WATER ACT

1984-85

| Agreement | Type | Participants | Duration | Funding 000's | Purpose |
|---|---|---|---|---|---|
| Qu'Appelle Channel Conveyance | Implementation of basin planning recommendations from study 1970-72 | Canada<br>Saskatchewan | 1986-89 | 2.226<br>(cost shared 50:50) | To increase channel conveyance to reduce flooding. |
| Souris Basin | Implementation of 1974-78 Study | Canada<br>Saskatchewan<br>Manitoba | | | Flood damage reduction measures recommended in the Souris Study - being undertaken as recommended by existing federal-provincial programs. |
| Fraser River Estuary Part II (Pending) | Framework Planning | Canada (DOE, DFO, Harbour Commissions)<br>British Columbia | 1985-91 | 1.500.<br>(cost shared) | Implementation of recommendations of Fraser River Estuary Study 1979-1982. |
| South Saskatchewan Study (Pending) | Basin study | Canada<br>Saskatchewan | 3 year<br>1985-88 | 1.500.<br>(cost shared) | To develop management plan for Saskatchewan portion of the basin. Alberta completed independent study of upper portion of the basin in 1984, public hearings are being held. Water of the Saskatchewan River is apportioned under the Prairie Provinces Water Agreement 1969. |
| Fraser River Flood Control | Issue specific | Canada (DOE)<br>B.C. | 1968-Dec. 1986<br>Extension proposed<br>1986-91 | 120.000.<br>(cost shared)<br>41.000.<br>(cost shared) | |

| Agreement | Type | Participants | Duration | Funding 000's | Purpose |
|---|---|---|---|---|---|
| Prairie Provinces Water Agreement | Apportionment | Canada<br>Alberta<br>Manitoba<br>Saskatchewan | continuous since 1969 | ½ by Canada 1/6 by each of provinces (max. federal share 625.K to be determined by Order-in-Council) Projected 400K annually 1985-90 | Agreement administered by Prairie Provinces Water Board, 5 Committees and Secretariat - objective is equitable apportionment of interprovincial prairie rivers flowing eastward; Board also deals with matters referred by entities, e.g. water quality objectives, evaluation of groundwater resources, apportionment of westward flowing rivers. |
| Manitoba Mercury Study | Issue Specific | Canada (DOE)<br>Manitoba | March 1983 - December 1986 | 760.K (cost shared) | To identify sources of pathways of mercury movement through ecosystem. To suggest solutions remedies to Mercury contamination problem. |
| Ottawa River Regulation | Flow regulation (issue specific) | Canada<br>Ontario<br>Quebec | Continuous since March 1983 | cost shared 50:25:25 max. 450K federal annually as determined by Order-in-Council Projected 300K per annum to 1990 | Integrated management of Ottawa Basin reservoirs and regulation of Ottawa River for competing uses - hydro power production, navigation, recreation, flood protection, water quality. |
| Winter Basin Study | Groundwater | Canada<br>P.E.I.<br>Charlottetown | April 1984 - March 1987 | Work shared (funding under CWA not approved) | Data Acquisition and assessment of aquifer hydraulics of basin to determine reliability of water supply system for Charlottetown. |

| Agreement | Type | Participants | Duration | Funding 000's | Purpose |
|---|---|---|---|---|---|
| Great Lakes Water Quality | Issue Specific | Canada<br>Ontario | August 1971 - March 1985 (renewed in 1976 and 1982) | To 1984-85 DOE share 5.9 million plus $65 million as one time grant for sewage treatment (1982-85) to meet requirements of Canada-U.S. Agreement.<br>1986-1990 - estimated commitment of 9.2 million.<br>Participants each pay 50% of research and surveillance programs.<br>Worksharing to coordinate federal-provincial activities to meet Canada-U.S. commitments. | To coordinate and cost share Canada-Ontario program to meet Canada-U.S. obligations under International Great Lakes Water Quality Agreement 1978. |

# WILDLIFE CONSERVATION PROGRAMS

## Background

The Canadian Wildlife Service (CWS) derives its mandate primarily from the Migratory Bird Convention Act (1917), and the Canada Wildlife Act (1973). CWS is required to protect migratory birds and their habitat and may, with the co-operation of the province involved, undertake research, conservation and interpretation on all non-domesticated animals (except those species covered under the Fisheries Act). Action is normally taken on wildlife of national or international significance such as transboundary populations and endangered species. Co-operative action is taken on species where the results apply to more than one jurisdiction or where, for the sake of efficiency, the work is done in a central location.

CWS operates with approximately 300 PYs and $23 million per year. A 23 per cent resource reduction occurred in November 1984 resulting in the transfer of parts of the interpretation program to other agencies, and an elimination or reduction of several research programs.

Wildlife is of value to a wide segment of the Canadian population including native subsistence hunters, sport fishermen, bird watchers, and industry. Use of wildlife contributes approximately $4.2 billion to the economy, and is as well an essential component of a balanced, healthy environment vital to all Canadians. Wild plants and animals are also used extensively as an early warning system in monitoring the health of the environment. In short, wildlife is an integral part of the economic, environmental, and social fabric of Canada.

The three factors affecting the numbers and distribution of wildlife in Canada, are: 1) the activities of society as a whole, including land use practices, industrial development, and urbanization. 2) a changing understanding of the role of wildlife in the general health and balance of the environment (wildlife laws now address more than just game animals or wild plants and animals that are of immediate use); 3) the impact on wildlife conservation due to the changing roles of the various levels of government and non-government organizations. The provinces and territories are developing much greater capabilities to deal with wildlife issues of regional importance, and there is a growing number of international wildlife issues to which the federal government must turn its attention. It is now also recognized that NGOs can and should play a greater role in wildlife research, conservation, and interpretation.

## Summary Assessment and Key Directions

Interviews with provinces/territories and non-government organizations indicated support for a strong federal role in wildlife, including migratory bird conservation. Some stressed the importance of having a high public awareness of wildlife issues if efforts at conservation are to be successful.

While it is generally agreed that there is a requirement for a strong federal presence, there is a pressing need to redefine the roles and responsibilities of the various levels of government and non-government organizations.

The major wildlife issues, in addition to the question of which agencies should be responsible for which activities, relate to habitat protection, endangered species, and other international issues such as illegal trade, loss of markets due to protests against seal hunting and leg-hold traps, and transboundary issues.

Within Canada there is a need to ensure that the federal wildlife agency meets the responsibility of managing wildlife on federal lands, and that the benefits of wildlife conservation accrue to all Canadians, particularly native groups. Native peoples can, and should play a greater role through improved consultation mechanisms to incorporate native skills and expertise in research, conservation and interpretation.

The study team recommends to the Task Force that the government consider the following measures:

### A. Mandate

**Develop a Federal Wildlife Policy to clarify the federal mandate, and federal/provincial/territorial and NGO roles and responsibilities in the areas of research, conservation, and interpretation, and immediately thereafter: (1) undertake negotiations with provinces and territories for new wildlife**

**agreements in accordance with this Policy, and (2) develop programs to enlist the support of non-government organizations.**

The public reaction to the wildlife service reductions in November 1984, as well as comments received during our interviews indicate that wildlife is of great value to Canadians from an economic, cultural, and ecosystem perspective, and that the federal government has an important responsibility in research, conservation and interpretation. Interpretation supports conservation by providing information and experience resulting in an increased public awareness of the significance and dynamics of wildlife populations. Much of the work involves wildlife populations of national and international significance that are in danger of global extinction or that migrate between jurisdictions where their well-being depends on the appropriate action of those jurisdictions. While there is general agreement that the federal government has an important responsibility, the changing wildlife issues and evolving provincial and territorial capabilities have resulted in uncertainties with respect to roles and responsibilities. These roles and responsibilities require clarification. There are several mechanisms in place which should be used to facilitate this process including the Federal Provincial Wildlife Conference, and Canadian Waterfowl Advisory Council.

## B. Level of Resources

**Maintain the current level of person-years and dollars allocated to the Canadian Wildlife Service (CWS) and that staff be directed to examine and list priority of existing projects, and projects terminated in November 1984, and if deemed appropriate and desirable, to reinstate suspended high-priority projects through internal reallocation of CWS resources.**

Given the cutbacks to the Wildlife Service in November 1984, the subsequent loss or reduction of programs and the degree of public reaction, there would be serious negative impacts if further reductions were made. In addition, further reductions should only be considered following project review and priority listing, and internal reallocation of existing funds.

## C. Major Wildlife Issues

In consultation with the Provinces give top priority to: habitat concerns; wildlife of national and international significance; the effects of contaminants; and the humane use of wildlife.

Increase the effects to reduce the negative impact of anti-hunting and anti-trapping groups on the employment and lifestyles of Canadians through activities designed to promote increased public awareness of both sides of these highly emotional issues.

# MIGRATORY BIRDS CONSERVATION

## OBJECTIVES

To manage and protect migratory birds and their habitat.

## AUTHORITY

Key: Government Organization Act (1979)
Canada Wildlife Act (1973)
Migratory Birds Convention Act (1917)

## DESCRIPTION

Under the terms of the Migratory Birds Convention signed with the United States in 1916, both countries have the responsibility for protecting over 500 species of migratory birds and their habitat. The species protected include waterfowl such as ducks, geese and swans, and other birds such as the American robin, swallows and seabirds. Seven of these species, including the whooping crane and piping plover, are either endangered or threatened.

The purpose of protecting the birds is to ensure the maintenance of a balanced ecosystem, and to provide a continued supply of birds for those who wish to hunt, or enjoy them in non-consumptive ways. Birds are an essential element of the ecosystem in many ways; for example, they prey on species detrimental to man's interest, and supply fertilizer for the land and oceans. The huge colonies of seabirds provide many of the essential nutrients for the cycle on which the commerical fishery depends. Other birds eat wildlife which are damaging to forestry. Birds are also used as an early warning system to indicate environmental problems which might be harmful to man.

The Migratory Birds Convention Act establishes mechanisms for the federal government to establish Migratory Bird Sanctuaries (MBS), and provide other forms of protection such as the setting of hunting seasons and bag limits, which are enforced by federal and provincial/territorial wildlife officers, and the RCMP. The sanctuaries provide refuge for the birds themselves, and can also be managed to protect or improve habitat. Similar protection, and habitat management can be achieved through the establishment of National Wildlife Areas (NWA), under the Canada Wildlife Act.

Other activities of the program include issuing hunting permits and providing information and advice to other government and private groups on bird protection, habitat management, and bird problems e.g. hazards to aircraft and crop damage. The program also provides input to the native land claims process by providing research data and assessing the biological implications of proposed agreements or legislative changes. Further, certain species of birds are at the top of the food chain, and the program studies these species to monitor the effects of contaminants on the ecosystem, and to see if the birds themselves are being affected.

A network of 42 National Wildlife Areas covering over 500 km$^2$, and 79 Migratory Bird Sanctuaries covering 115,000 km$^2$ has been established. In general, except in the North, the federal government does not own the land on which MBS' are located. Rather, the owner has agreed to allow federal regulations to be applied. In most cases, while it is not essential, the federal government owns the land on which NWAs are situated.

The Department of the Environment (DOE), through this program, undertakes research to understand the factors affecting migratory bird populations, the relationships between birds and their environment, and the effectiveness of various management activities. Some of these projects are of international significance. For example, the data from the Atlantic Seabird Research project is used by several North Atlantic countries.

The roles and responsibilities for the implementation of the Act are divided between the federal, provincial and territorial governments. The federal government has the ultimate responsibility to ensure that the Act is implemented, but the provinces and territories play important roles in research, determining bag limits and seasons, enforcement and habitat management. In discussions with one province, it was indicated that savings of up to $1.5 million could be realized by turning certain functions over to the province. However, when the basis of those statistics was assessed, it became apparent that if this course were followed, no real savings would occur, and there would be a reduction in the protection of the resource.

Migratory bird conservation has traditionally been a co-operative effort between both levels of government and appropriate non-governmental organizations. For example, Ducks Unlimited currently spends almost twice as much money each year on waterfowl habitat conservation than the entire budget of the Canadian Wildlife Service. The Canadian Wildlife Service was also instrumental in the establishment of Wildlife Habitat Canada, a private foundation whose principal goal is to protect habitat.

The federal government is charged with ensuring that federal obligations for the protection of migratory birds are met with minimal disruption to other Canadian interests. For example, the "Migratory Waterfowl Crop Depredation Agreement" protects farmers against crop loss to feeding ducks and geese. This joint federal-prairie provinces cost-shared agreement began in the early 1970s and now contains three complementary elements; habitat preservation, crop damage prevention, and crop damage compensation. Between 1500 and 2000 claims for crop damage are received annually, and are based on partial or complete damage to about 125,000 acres. Payment is made on the basis of the percentage of damage up to a maximum of $70 per acre. Since the average market value for wheat in 1984 was $125 per acre, this compensation resulted in a net loss for the producer. The federal share of the payments in 1984 was $1,040,000. The federal share of the cost is charged to Agriculture Canada and is therefore not included in the DOE expenditures quoted in this paper.

Management and protection strategies for waterfowl are contained in the "North American Waterfowl Management Plan". The plan identifies critical habitats requiring protection and sets waterfowl population targets. In Canada, implementation of regulations and management activities based on the Plan are then co-ordinated through the Canadian Waterfowl Advisory Council. The Council consists of members from the federal, provincial and territorial governments and national wildlife NGOs.

**PROJECTED EXPENDITURES** (000s of dollars)

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | 9,539 | 10,267 | 10,325 | 10,293 |
| O&M | 4,187 | 4,931 | 5,046 | 4,761 |
| Grants and Contributions | 3,011 | 2,185 | 2,257 | 3,515 |
| Capital | 945 | 650 | 731 | 721 |
| **TOTAL** | 17,682 | 18,033 | 18,359 | 19,290 |
| Revenues | 1,869 | 4,008 | 4,008 | 5,258 |
| Person-Years | 227 | 237 | 238 | 237 |

**Notes:** 1. Revenues are increasing because of the sale of habitat conservation stamps. The proceeds are then given to Wildlife Habitat Canada in the form of a grant.

2. The PY allocation was increased as a result of an overall reorganization of CWS following ministerial direction in November 1984. There was a corresponding reduction in the person-year allocation to the Research and Conservation program.

3. The person-years are utilized approximately as follows; 150 for operations, 37 for research, and 50 for management and administration including secretarial, clerical and library support. This also includes program management at the operational level.

## BENEFICIARIES

The Canadian public and others benefit directly by having their wildlife heritage protected and available for enjoyment through hunting or viewing. Society as a whole benefits from the role of birds in the maintenance of a health ecosystem, and the use of birds in specific ways, such as the dependence of native peoples on migratory birds for subsistence hunting and life style. Others benefit indirectly by economic gain through the sale of goods and services to those using migratory birds, e.g. the sale of guns or binoculars, and the provision of accommodation, transportation and meals.

Organizations and agenices such as the U.S. Fish and Wildlife Service, benefit from the research data and other expertise provided.

The following are examples of economic costs or benefits drawn from a 1982 DOE study on "The Economics of Canadian Waterfowl", which was based on 1980 statistics. As these are only examples, they do not tally to the net benefit indicated.

| **Benefits:** | **Millions** |
|---|---|
| Naturalists (spent on bird watching and photography) | $ 81.1 |
| Native subsistence hunters (food value of waterfowl) | 7.6 |
| Suppliers of goods and services sold (to the more than 400,000 resident and non-resident hunters) | 226.9 |
| Hunting permit payments to governments | 3.7 |
| Ducks Unlimited (spent on habitat improvements) | 40.0 |
| **Costs:** | |
| Farmers (losses from waterfowl damage) $10M less reimbursement of $2.1M | 7.9 |
| Airlines (bird damage and avoidance) | 1.6 |
| Federal-Provincial Governments Waterfowl Costs (conservation, management, enforcement, compensation) | 15.4 |

The study concluded that Canadians receive a flow of net benefits from the Migratory Waterfowl resource in the order of $118 million.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

An A-base review was carried out in 1977/78. The mandate of the program was not questioned, and several recommendations were made particularly with respect to operations and resource allocation. In general, the recommendations have been acted on. Recommendations related to improving habitat protection and enforcement of regulations have been met in part by the establishment of Wildlife Habitat Canada. The enforcement question is being dealt with through new policies and negotiations of accords with the provinces; the first one is now underway with Alberta.

A DOE evaluation of the Migratory Birds Program was conducted in 1981. The program was found to have a very strong mandate, but lacked a policy statement leading to a confusion of roles vis-à-vis the provinces. A policy statement, has been issued and discussions on provincial accords have taken place but the process is not yet complete.

## OBSERVATIONS

Although waterfowl make up only 33 of the 500 species of birds covered by the Migratory Birds Convention Act, there is more statistical information available on waterfowl than on other types. The data required for management of other birds are not as detailed and, therefore, statistics are not kept on population estimates, but rather on trends based on the breeding bird surveys. The following is an example of the data collected: 80 per cent of North American waterfowl are bred in Canada, and their population ranges from a high of 70 million in September to a low of 1¼ million in January. The harvest in Canada averages 7.1 million annually, while in the U.S. it averages 23.4 million.

The most serious problem in migratory bird conservation is the destruction of habitat, particularly for waterfowl, as the loss of wetlands is estimated at around 100,000 hectares per year. The major problem areas are in the prairies, the lower mainland of B.C. and the Great Lakes-St. Lawrence Region.

A major factor contributing to loss of wetlands is the perception that they are wastelands or unproductive, and should be drained for agricultural purposes, filled for uses such as shopping centres or airports, or converted to marinas.

The Migratory Birds Convention (1916), in spite of its shortcomings, is a model of international co-operation in migratory species management. One shortcoming of the convention is that Mexico and other Latin American states are not signatories. With the exception of the Bonn Convention (1981) on Migratory Species, there are few examples of major international co-operation. Canada is not a signatory to the Bonn Convention principally because it includes marine species which Fisheries and Oceans feels are adequately covered in other agreements.

A DOE policy in the context of a federal policy on wildlife is under development.

Habitat protection is widely recognized as being the major problem in wildlife conservation, and waterfowl in particular. The federal, provincial and territorial governments and NGOs are all contributing to solving the problem. However, it was decided that an umbrella organization was required and the Wildlife Habitat Canada foundation (WHC) was established in 1984. WHC is a private foundation which received an initial $3,000,000 grant from the federal government, and will receive all of the proceeds from the sale of $4.00 habitat conservation stamps, which must be purchased along with hunting permits. Additional funds will be generated through donations, grants, drives, etc.

WHC is operated by a Board of Directors reflecting broad concerns for wildlife. The current board consists of three Ministerial appointees, plus representatives from provinces, a native group, agriculture, forestry and NGO's (Ducks Unlimited). The foundation has three objectives:

a. To promote the conservation, restoration and enhancement of wildlife habitat in order to retain the diversity, distribution and abundance of wildlife (CATALYST).

b. To provide a funding mechanism for the conservation, restoration and enhancement of wildlife habitat in Canada (SUPPORT).

c. To foster co-ordination and leadership in the conservation, restoration and enhancement of wildlife habitat in Canada (WATCH-DOG).

## ASSESSMENT

Earlier reviews, and the results of our interviews indicate that the program has a clear objective, and is generally effective in achieving its objective. The major criticism is that the program spends a disproportionate amount of its resources on waterfowl.

With the continued PY and dollar reductions since the 1978/79 A-base review, the program is extremely lean.

There is a wide diversity in the perceptions of the various provinces and territories regarding the roles and responsibilities of the two levels of government. The request by certain provinces to reconsider existing arrangements with the federal government regarding sales of licences and enforcement is very complex, and affects other provinces which do not share the same view. An updated, clear policy statement is required, and negotiations with the provinces and territories are currently underway.

A variety of reports exist identifying critical areas, and population targets in various regions, and on certain species. For example, the North American Waterfowl Management Plan identifies population targets on a regional basis, and there is a habitat conservation plan for the North which identifies critical habitats. Further, there are provincial conservation plans, and recovery plans for various endangered species which identify population targets and critical habitats. No single document exists which pulls this data together, and sets out protection priorities. While a document of this general nature would be useful, it would have to remain flexible, as priorities can change rapidly. For example, a proposed development may pose an immediate threat to a second ranked area, thus bumping it it top priority.

Inuit leaders expressed concern that their people were not being adequately consulted, nor was their expertise being taken into consideration. While attempts have been made in the past to involve native people in wildlife research and conservation, there is room for improvement in this area.

Another concern is the impact on wildlife of the NATO low level training flights from Goose Bay which frighten and scatter the wildlife over that wide general area to the detriment of the native subsistence hunters. They state they had not been consulted and their current protests are ignored.

Wildlife Habitat Canada has, in its goals and objectives, to develop what is, in effect, a habitat conservation strategy. It is not, however, planning to use a public hearing process which could both generate new ideas and increase public understanding and support for conservation efforts.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The program be maintained at its current level of resources and full consideration of the need for greater enforcement of habitat protection, and more non-game bird management be given by CWS managers during the current re-organization.

b. Support the initiatives of the Wildlife Habitat Canada Foundation to identify critical habitats and ensure their protection, by conducting a series of public hearings to be completed by March 1986.

c. Immediately initiate meetings with the appropriate native national organizations, leading to discussions between the local natives involved and the Department of National Defence, to resolve this matter of the disturbance by low level NATO training flights at Goose Bay.

d. Intensify efforts to involve native peoples in migratory birds management, and seek to have a protocol signed with the U.S. to permit regulation of subsistence hunters.

e. Intensify efforts to bring Mexico into a continental agreement on migratory birds.

f. The federal wildlife policy under development be completed by June 1986.

g. Seek agreements immediately following the completion of the federal wildlife policy with the various jurisdictions on migratory bird management. Emphasis should be on the issuance of hunting licences, establishing and enforcing regulations, habitat protection, and the use of U.S. Fish and Wildlife personnel in research and habitat protection. Because of the wide variety of interests and opinions between provinces, it is essential that this process be carried out through the Canadian Waterfowl Advisory Council.

## WILDLIFE RESEARCH AND CONSERVATION

### OBJECTIVES

To promote the rehablitation and enhancement of threatened and endangered species.

To foster the conservation of nationally and internationally significant wildlife populations.

To provide information on the presence of toxics in the environment and their effects on wildlife.

To monitor, protect and evaluate the impacts of airborne pollutants on aquatic and terrestrial ecosystems.

### AUTHORITY

Key: Government Organization Act (1979)
Canada Wildlife Act (1973)
Convention on International Trade in Endangered Species
Game Export Act (R.S. 1970, c. G-1)

Other: Export and Import Permits Act (R.S. 1970, c. E-17)
Environmental Contaminants Act (1974)
Migratory Birds Convention Act (1917)

### DESCRIPTION

Within the area of wildlife conservation, the focus is on threatened and endangered species and the implementation strategy is generally through co-operative arrangements with the provinces, territories and non-government groups. National leadership and co-ordination is provided in a number of subject areas along with participation in various joint ventures. The program thus houses the scientific authority for the Convention on International Trade in Endangered Species, and acts as the secretariat to the Committee on the Status of Endangered Wildlife in Canada and the Canadian Council on Ecological Areas. Most field work relates to the reintroduction or rehabilitation of threatened or endangered species. Programs currently deal with a variety of species including the piping plover, peregrine falcon, swift fox, black-footed ferret and pearcy caribou.

In addition to this work, the Wildlife Conservation Program deals with internationally shared wildlife populations other than migratory birds. Some present efforts are directed toward the Porcupine caribou herd with work shared between the Canadian Wildlife Service (CWS) and Alaska, and toward polar bears which are managed under an international agreement of five nations. In both these cases, the territories and provinces are also involved with management, research and monitoring programs.

Program investigations into toxic chemicals in the environment encompass three major areas of activity:

a. Monitoring the levels of toxic chemicals in wildlife throughout Canada. This is done on a non-intensive and selective basis. Samples are collected throughout the country and analyzed at a central DOE laboratory located in Ottawa.

b. Assessing the impact of toxics in wildlife.

c. Providing advice to various agencies on the impact of toxics on wildlife. This information is used by Agriculture Canada for pesticide registration and by the provinces for issuing permits for the use of pesticides.

Acid rain investigations conducted by the CWS are part of a much broader departmental program. Special funding has been provided by Cabinet to undertake specific research studies within the wildlife area. Some work is being done by CWS biologists and some has been contracted out to universities.

**PROJECTED EXPENDITURES** (000s of dollars)

| | **84/85** | **85/86** | **86/87** | **87/88** |
|---|---|---|---|---|
| Salaries | 5,420 | 2,653 | 2,656 | 2,563 |
| O&M | 2,419 | 1,714 | 1,641 | 1,362 |
| Grants and Contributions | 491 | 693** | 683 | 183*** |
| Capital | 306 | 134** | 136 | 120 |
| **TOTAL** | 8,636 | 5,194 | 5,116 | 4,228 |
| Revenues | -- | -- | -- | -- |
| Person-Years | 124 | 63 | 62 | 61 |

* The increase from 1984/85 to 1985/86, reflects a contribution to the Fur Institute for work on the development of humane trapping systems.

** The decrease in capital from 1984/85 to 1985/86 represents a return to a normal level following a number of large purchases in 1984.

*** The decrease from 1986/87 to 1987/88 reflects the end of contributions to the Fur Institute.

Reductions in resources between 1984/85 and 1985/86 represent program reductions in the following areas: research and advice to other agencies on pathology and parasitology; research on forestry-wildlife interactions; research on the effects of pesticides on prairie sloughs; and research and advice to Parks Canada on wildlife management in national parks.

**BENEFICIARIES**

The major stakeholders relating to the program include other federal government departments, the provinces and territories. Activities of particular note, are research related to wildlife management on federal lands. Canada plays a leadership and co-ordination role and also participates in joint ventures. Many projects are jointly or solely funded by non-government organizations such as the World Wildlife Fund, and the Canadian Wildlife Federation. These two organizations spent approximately $600K on wildlife research and conservation projects in 1984.

Native people are major stakeholders insofar as they directly depend on wildlife and share cultural, social and economic benefits directly related to wildlife populations.

The results of toxic chemicals work are of primary interest to other government agencies and bodies, especially the International Joint Commission, the Environmental Protection Service and Agriculture Canada (Research). Results are of considerable significance to wildlife managers throughout Canada, notably those within the migratory birds branch and within the provinces. Toxic chemical information provided by the program is also used by the provinces in issuing permits for the use of pesticides.

The results of LRTAP studies are significant to wildlife managers and those government agencies charged with regulating airborne pollutants.

Those persons directly and indirectly associated with the fur industry benefit from research results on humane trapping methods insofar as they overcome international objections to harvesting methods.

People, animals and plants collectively benefit from a healthy ecosystem. Factors which have an impact on the integrity of the ecosystem at one level can have significant effects at other levels.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

An A-Base review of this program was carried out in 1977/78. The major recommendations related to a lack of clear policy. For example, specific comments were made on the need for policy statements on the nature of federal/provincial agreements and priority setting on rare and endangered species.

Considerable work has been done in both these areas. For example, there is work currently underway at the departmental level on the development of environmental accords, and at the CWS level on an endangered species conservation strategy.

## OBSERVATIONS/ASSESSMENT

Confusion exists regarding the suitability of objectives and the mandate associated with these programs. The objectives outlined were recently formulated in the objectives has been made in consultation with program staff and reflect changes in program emphasis.

Some provincial wildlife representatives expressed concern regarding the role/activities of the CWS in research and conservation, indicating a need for wildlife research of national significance and a need to clarify the respective roles of the federal and provincial governments in this regard.

All individuals contacted (representing federal and provincial governments and NGOs) expressed concern regarding the recent reduction in resources for the CWS, and in particular the wildlife research program. Details of these reductions are outlined in the attached table.

These same parties also expressed a corresponding concern regarding the manner in which reductions were made.

The cuts were not clearly understood, and it was generally concluded that some high-priority items were lost (e.g., veterinary services) and should be re-instated. Furthermore, there was inadequate explanation for discontinuing wildlife research in national parks where responsibility for wildlife management rests with federal government.

Samples of program results/impacts where work is continuing include the following:

a. Spruce budworm spraying in the maritimes was causing significant damage to wildlife populations, notably migratory birds in the early 1970s. The Program became involved in a study of spraying pratices in New Brunswick and provided advice to government and industry on how to minimize damage. Monitoring of new experimental spraying practices is continuing. The damage to wildlife has been significantly reduced. Results from these studies have provided supplementary benefits to government agencies concerned with human health.

b. Surveys on the Great Lakes were initiated in the early 1970s because there was a complete reproductive failure of many bird populations and toxic chemicals were thought to be implicated. As a result of monitoring and research programs undertaken on bird wildlife, this Program discovered the presence of dioxins, PCBs, Mirex and other toxics in the Great Lakes. These toxics have severe impacts on bird species, and also significant implications for human health. Monitoring of bird populations proved to be one of the most effective ways of tracking the presence of these chemicals in the Great Lakes.

c. In the 1940s there was only one herd of wood bison left in Canada. Federal and provincial governments set an objective of establishing five wild herds. There are currently herds in the Yukon, Northwest Territories, Alberta and Manitoba, and efforts are continuing to re-establish the fifth.

d. The CWS took the lead in developing a five-nation international polar bear Management Agreement.

This led to a federal/provincial research effort which has allowed the establishment of a regulated harvest of polar bear by native people.

e. The CWS was a major partner in the funding of extensive studies for development of humane traps. In addition, the CWS sponsored establishment of the Fur Institute of Canada under a federal charter which has a broad membership base and is carrying on with this work.

Comments regarding program delivery in the three major areas are as follows.

a. Wildlife Conservation - Most work in this area is done co-operatively with other governments and NGOs. Work with the provinces is primarily conducted under existing federal/provincial agreements, with additional agreements being negotiated to formalize existing working arrangements. Federal research and monitoring is directly related to specific rehabilitation or reintroduction programs. Some work has been contracted out but the extent of this contracting has been limited by funding.

b. Toxic Chemicals - DOE has taken the view that CWS should be involved in monitoring toxic chemicals in wildlife and the effects of toxic chemicals on migratory birds. Furthermore, it has been concluded that this is an appropriate federal function. In relation to toxic chemicals, it should be noted that Agriculture Canada is required to provide an assessment of the potential impact of pesticides and herbicides on the environment before they are registered. This assessment work is conducted by DOE on behalf of Agriculture Canada.

c. Acid Rain - The CWS maintains a small group of active researchers in this area. They have essentially been functioning as a task force dealing with a high priority issue. Scientists and technicians were drawn from other programs for this particular task and some additional PYs were allocated.

As previously indicated, the mandate, roles and responsibilities of the CWS as they relate to wildlife conservation are not clear. This lack of clarity has been recognized and during recent years efforts have been made to develop and appropriate Federal Wildlife Policy and associated CWS strategy. These efforts are continuing at present.

The program as it exists at present does not appear to duplicate or work at cross purposes with other (federal or provincial) programs or activities of NGOs.

It is doubtful if further savings could be realized through program redesign; however, the recent resource reductions have an effect on program delivery and have necessitated organizational changes. Organization alternatives are currently being examined and when implemented should result in increased efficiency and effectiveness in delivery.

It is difficult to quantify the direct economic impacts of this program; nevertheless, it can be stated that adverse impacts associated with further program reductions in the three program areas (wildlife conservation, toxic chemicals, acid rain) would be signficant.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. This program be allowed to continue at its existing level of service, recognizing the fact that it recently (November, 1984) sustained a 23 per cent reduction in resources.

b. By June 1986, and in consultation with the provinces, clarify the roles and responsibilities of the federal government and the provincial governments regarding the conduct of wildlife research.

c. Development of the federal government policy statement on wildlife policy be completed by June 1986.

d. Required organizational changes are actioned by December 1985.

e. Action be initiated immediately to examine and list by priority existing projects and projects terminated in November 1984 with a view to re-instatement of suspended high priority projects through internal re-allocation of resources.

f. Action be taken immediately to examine and recommend alternatives for reviewing and assessing wildlife research within the Department of the Environment. Alternatives considered should include, but not be restricted to, formal review by peer groups, review and direction by a management board with representation from the Department, other government departments and non-government bodies.

g. Progress on these actions be closely monitored with reports provided to the Minister of the Environment on a bi-monthly basis.

## WILDLIFE INTERPRETATION

### OBJECTIVES

"To encourage and provide opportunities for the development of awareness, enjoyment, understanding and appreciation of Canada's wildlife heritage and its environment". This quotation is from the Interpretation Program Policy and refers to two specific goals:

a. To obtain public support and co-operation for wildlife conservation efforts by increasing public awareness of the major issues in a national and international context, informing them of the specific techniques employed in wildlife research and conservation, and increasing the public's understanding of the role of wildlife in the ecosystem, and its value to man.

b. To serve as a vehicle to deliver the benefits of wildlife research and conservation directly to Canadians and others, by providing them with an opportunity to experience and enjoy their wildlife heritage through a first hand experience.

### AUTHORITY

| | |
|---|---|
| Key: | Government Organization Act (1979)<br>Canada Wildlife Act (1973) |
| Other: | Migratory Birds Convention Act (1917) |

### DESCRIPTION

The term interpretation, rather than education or some other description, is used in parks, museums, wildlife refuges, historic sites, and other similar settings for two reasons:

a. These are informal learning environments, where people go for a "recreational" experience for both entertainment and/or self-development and to satisfy their curiosities. They are not formal education settings.

b. The definition of interpretation (according to the Association of Canadian Interpreters), is to "reveal meanings and relations of places, artifacts, landscapes or sites through a first hand experience".

The Canadian Wildlife Service Interpretation Program was based on a National Plan (1981) which identified seven wildlife regions in Canada:

a) Pacific b) Mountain c) Boreal d) Arctic
e) Prairie f) Great Lakes-St. Lawrence g) Atlantic

The intention, according to the National Plan, was to interpret the wildlife in each of these regions and to present this message in a national and international context.

There were two techniques employed:

a. Use of existing National Wildlife Areas and Migratory Bird Sanctuaries as resources to interpret the area, usually in relation to wildlife management practices on that particular refuge. These sites were established primarily as refuges, and interpretation was employed only if appropriate. The media used were self-guiding interpretive trails with either pamphlets or signs, outdoor exhibits, or in one case, a self-guiding taped auto-tour. By providing specific routes to follow, explaining the purpose of the site and requesting co-operation from the visitors, the interpretation programs functioned as a management tool to minimize visitor disturbance of wildlife populations. There were programs on about 12 sites.

b. Establishment of National Wildlife Areas where the primary function was interpretation. The goals was to establish one of these interpretation centres in each of the seven wildlife regions identified previously.

To date, five centres had been established in four of the regions; mountain (Creston), prairie (Webb), Great Lakes-St. Lawrence (Midland and Cap Tourmente) and Atlantic (Percé). Two centres were in the Great Lakes-St. Lawrence

Region because of the need to serve and control the upwards of 10,000 visitors per day to Cap Tourmente during snow goose migration.

The purpose of the centres was to interpret the region as a whole for the maximum number of visitors. As such, they were established in an ecologically representative area, on a major transportation route and near a population centre.

Each centre had an orientation area where visitors were informed of what was available and equipped with the necessary supplies such as field guides, binoculars, etc. They then experienced the site through self-guiding trails with signs or pamphlets, exhibits, marsh boardwalks, viewing towers, or in one case, an underwater window. There were also naturalist guided walks, presentations, campfire talks, or perhaps short canoe excursions. Following the "first hand experience" the visitors then went through the exhibit hall which was designed to reinforce the outdoor experience and present important topics which could not be handled outside. Over 260,000 visitors take part in the program per year.

Centre staff were also engaged in mass media programs such as regular television and radio shows, or writing newspaper columns.

Formal co-operating associations were being established at each of the five major centres. The purpose of the association was to devolve part of the operation of this public service to a non-government organization.

**PROJECTED EXPENDITURES** (000s of dollars)

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries | 1,271 | 11.5 | 11.5 | 11.5 |
| Other O&M | 380 | 341.7 | 183 | 58 |
| Grants and Contributions | 69 | 200 | -- | -- |
| Capital | 31 | -- | -- | -- |
| **TOTAL** | 1,751 | 553.2 | 194.5 | 69.5 |
| Revenues | -- | | | |
| Person-Years | 36 | | | |

Notes on Expenditures:

The O&M from 1986/87 onward does not include an amount for major building maintenance.

The 11.5K shown as salaries is part of the federal government's contribution to the manager's salary at Midland, but is not part of a government person-year.

175K of the amount of O&M indicated in 1985/86 and 1986/87 is an interest free loan to Midland.

With the exception of funds for major building maintenance and an indefinite 25K contribution to Creston, all expenditures will likely cease in 1987/88.

## BENEFICIARIES

The program benefitted all Canadians by contributing to a greater understanding of wildlife conservation issues, hence increasing the effectiveness of measures being taken to conserve and utilize the country's wildlife resource on a sustainable basis.

The program delivered specific benefits to visitors by providing them with an opportunity to experience and enjoy their wildlife heritage. The major intended audience is the travelling public, thus providing Canadians with the opportunity to experience wildlife in other parts of the country.

The program benefited local and regional residents by serving as tourist attractions, thus contributing to the local economy.

The centres served as an important environmental education resource for regional school boards by holding teacher workshops and providing "edukits". The teachers, rather than the naturalists, then led the school groups through the centre.

## POLICY REVIEW, EVALUATION, AUDITS DONE ON PROGRAMS

The interpretation program was evaluated as part of an overall DOE A-base review in 1977/78. It was concluded that the Canadian Wildlife Service (CWS) had a mandate to conduct such a program but that it should not design and build exhibits in-house. Two person-years and associated budgets were cut.

In 1980/81 the interpretation programs in CWS and the Canadian Forestry Service (then part of DOE) were subject to a Departmental evaluation. It was concluded that CWS had a mandate to conduct interpretation programs, and that the program was effective in meetings its goals. The major recommendations related to program efficiency and suggested the cost per visitor should be reduced by increasing visitation through marketing and reducing costs by establishing volunteer programs and co-operating associations. Visitation was significantly increased, and volunteer programs and co-operating associations were established or were in the process of being established at all centres.

In 1983, the Deputy Minister requested a review of the Department's Interpretation Programs (CWS, Forestry and Parks), to see if they could be combined or included as part of the Information Program. It was concluded in the "Loughrey Report" that the objectives and techniques of the interpretation programs were fundamentally different from Information Services and that they should stay with the operational units. Further, the objectives of the three interpretation programs are significantly different and should remain in the separate services. However, efforts should be made to co-operate in certain areas to reduce costs. It was therefore the policy to share in staffing actions, training programs, and media design and production.

In initial stages of the development of a new wildlife policy currently underway, interpretation was identified in a discussion paper as one of the activities appropriate to the federal wildlife service. The paper was reviewed widely, including the provinces and territories, without negative reaction to this section.

## OBSERVATIONS

In November 1984, the Minister of the Environment announced that the program would be eliminated as part of an overall reduction of the Canadian Wildlife Service. The interpretation centres would have to be taken over by the provinces, NGO's or the private sector by March 31, 1985 or they would be closed.

Subsequently, the Minister has concluded agreements with various organizations or agencies to ensure continued operation. The status of each centre is as follows:

a. Percé has been taken over by the Province of Quebec to serve as an interpretation and visitor reception centre for Bonaventure Island Provincial Park. No further federal funding is involved.

b. Cap Tourmente - DOE will continue to own and manage the National Wildlife Area (6 square miles), but the exhibit hall and other interpretive programs will be run on a concession basis by a private company. Bridge funding of $15,000 per year for the next three years is being provided by DOE. Major building maintenance will be continued indefinitely.

c. Midland operations will be taken over by the previously established co-operating association. Bridge funding will be provided for three years (1985/86 - $444,500, 1986/87 - $204,500 and 1987/88 - $29,500). Major building maintenance will be continued indefinitely.

d. Webb will be provided with $68.7K for operations in 1985/86.

e. Creston - DOE has increased its annual contribution by $25,000 to the Creston Valley Wildlife Management Authority, which is run by a federal/provincial/NGO Board of Directors and operates a 16 thousand acre reserve on which the centre is located. The Authority has taken over the operations of the centre.

f. The other interpretation programs on National Wildlife Areas and Migratory Bird Sanctuaries will cease to exist.

Interviews were held with individuals in provincial governments, other federal agencies, and non-government organizations. Most felt that wildlife conservation is extremely important, and that the interpretation program, by raising public awareness, makes an important contribution. Some provincial officials stated that, contrary to the position of some, interpretation should not be regarded as a frill.

CWS managers have pointed out that the loss of interpretation programs in National Wildlife Areas and Migratory Bird Sanctuaries will have a negative impact on the management of the wildlife populations at certain sites.

Concern was expressed that the cost per visitor was very high, at about $4.88. It should be noted, however, that this figure includes the normally high start-up cost per visitor of a new centre with low initial visitation. Further, the costs were beginning to drop as the marketing campaign, volunteer program, and co-operating associations which were being implemented as a result of the 1981 DOE Evaluation, were beginning to come on stream. The national average cost per visitor also includes expenses for interpretation on National Wildlife Areas and Migratory Bird Sanctuaries, but visitation is not included in the calculation as statistics were not kept on these sites.

## ASSESSMENT

Our interviews indicate that the objectives as stated were being achieved. However, in the light of recent ministerial announcements and wildlife policy reviews, it should be updated to reflect a national and international context. The Minister has indicated publicly that the elimination of the program was essentially a resource reduction and not because of the lack of a mandate.

Even if the operations of the five major centres are successfully taken over by local groups, the programs will lack central co-ordination and direction, and will therefore focus primarily on local issues. The reason that interpretation was built into the Canada Wildlife Act (1973) was to allow the federal government to develop programs with a national and international perspective.

Wildlife is part of a Canadian heritage. For example, though none exist in that province, antelope are a part of the heritage of Quebec residents. It is not the responsibility of the prairie provinces alone to provide opportunities for Quebec residents to experience and enjoy antelope. This would appear to be a proper and logical area for the provinces and the federal government to work in partnership to deliver this benefit to Canadians.

This type of experience is clearly one in which the visitor or user benefits the most, and should therefore be expected to shoulder a greater part of the cost, through direct user pay. This is therefore an opportunity for a non-governmental organization to work in partnership with both levels of government to provide a public service.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The federal government acknowledge that the Canadian Wildlife Service should have an involvement in the development of public awareness of the significance of Canada's wildlife heritage, and the provision of opportunities for Canadian's and others to enjoy wildlife in its natural environment.

b. The nature of the involvement, and the extent of resource commitment be determined following an outside review of the current operations of the programs on the five major centres, and the National Wildlife Areas and Migratory Bird Sanctuaries. The review should commence following the close of the tourist season in October 1986, and be completed by January 1987. Pending the outcome of the study, the current arrangements are an acceptable alternative.

## LAND CONSERVATION PROGRAMS

### Background

The legislative authority for the Land Conservation Programs is found in the Government Organization Act, 1979. The Programs are designed to promote environmentally sound use and management of Canada's land resources in keeping with federal responsibilities and national objectives. They provide for analysis and dissemination of information on present land use, land potential and the extent of land degradation from a national perspective. Data gathered are used to ensure that federal policies and programs, and the management of federal lands contribute to the wise use of Canada's land resources.

Forecast expenditures in 1984/85 totalled $6.327 million and 82 person-years with revenues of $0.475 million. The 1985/86 Main Estimates call for an expenditure of $6.135 million and 76 person-years with revenues of $0.475 million.

### Summary Assessment and Key Direction

Some of the most significant problems facing Canadians in relation to lands are: the loss and degradation of prime resource lands; the critical loss of productive potential; and the need to have a national perspective on the use and management of lands.

The study team concluded that a continuing need exists for a single agency to maintain a multi-sectoral national perspective on the stewardship of Canada's land resources. Furthermore, the objectives of the programs are considered to be valid and the activities constitute a realistic approach to their achievement. The programs are well targeted and there is little if any duplication of program activities in relation to provincial responsibilities. However, two areas of concern were identified:

a. the division of responsibilities for land-use activities among various departments; and

b. the low priority frequently assigned to land-use issues by many federal agencies.

The study team recommend to the Task Force that the government consider the following measures:

### A. Level of Service

**Retain the programs at the present level of resources.**

There is a need for a single agency to maintain a national perspective on the stewardship of Canada's land. The Lands Directorate performs this role and is already small; further reductions would not be possible without affecting the basic integrity of the total program.

### B. Organization

**Address the loss of prime resource lands as the top priority issue.**

The loss of prime resource land productivity is a major problem with long term economic and social consequences. The loss is due to degradation through such factors as erosion, salinization and decline of nutrients, to the conversion to other uses such as draining wetlands for agriculture, and to conversion of agricultural land to residential or industrial use. Much of the degradation is due to inappropriate resource management practices in both the agricultural and forestry sectors.

### C. Major Issues

**Examine the feasibility of consolidating land-related activities conducted in the Departments of the Environment, Agriculture, Tourism, Forestry, Energy Mines and Resources, and Indian Affairs and Northern Development; and where not possible to consolidate, to make working arrangements designed to facilitate effectiveness and efficiency.**

It is anticipated that consolidation of land activities in various federal departments would provide: an appropriate critical mass insofar as organization is concerned; a higher profile for land-related issues; and increased effectiveness and efficiency. Furthermore, such consolidation would avoid the present fragmentation of effort.

# THE LAND CONSERVATION PROGRAM
## (Land Monitoring, Evaluation and Data System and Land Use Policy and Research

### OBJECTIVE

To promote environmentally sound use and management of Canada's land resources in keeping with federal responsibilities and national objectives.

### AUTHORITY

Key: Government Organization Act (1979)

### DESCRIPTION

The program provides for analysis and dissemination of information on present land use, land potential and the extent of land degradation from a national perspective. this information is applied by many users in planning sustainable economic development. It also assists the federal government in dealing with major issues of national concern, such as acid rain, toxic chemicals, loss and degradation of prime resource lands and environmental impact assessment. The program also enables the Department to meet its responsibilities regarding the Federal Policy on Land Use and the Federal Lands Management Principle.

The stated goal of the federal policy on land use is to ensure that federal policies and programs and the management of federal lands contribute to the wise use of Canada's land resources.

The Federal Lands Management Principle states that federal lands should be managed so as to combine the efficient provision of government services in the efficient use of federal real property with the achievement of wider, socio-economic and environmental objectives.

The program contains no regulatory provisions.

Specifically, the program includes:

a. national inventories and data bases such as the Canada Land Inventory (CLI), Northern Land Use Information Series (NLUIS), Canada Land Use Monitoring Project (CLUMP) and Ecological Land Surveys (ELS). These are interdisciplinary in nature and deal with forestry, agriculture, wildlife, fisheries and recreation, as well as the socio-economic and ecological aspects of land. Typically, these projects are carried out under cost-sharing agreements with provincial, territorial and other federal departments/ agencies. The information is stored in the Canada Land Data System (CLDS) and used for land use planning, resource management, policy development, assessment of development opportunities and resolution of environmental issues such as acid rain, toxic chemicals and land degradation;

b. analysis of land use issues of national concern and the development of solutions which consider sustainability and cross-sectoral implications. The focus is on the loss and degradation of prime resource lands, the economic, social and environmental causes and consequences of these processes, and the impacts of federal programs on land use; and

c. co-ordination and implementation of the Federal Policy on Land Use through the Interdepartmental Commiteee on Land. Policy and program initiatives are co-ordinated with the provinces through the Canada Committee on Land Use. The management and use of federal land holdings are assessed to support the role in the administration of the Federal Lands Management Principle. Advice is given to the Treasury Board Advisory Committee on Federal and Land Management, and to federal departments with large holdings of federal land.

**PROJECTED EXPENDITURES (000s of dollars)**

| | 84/85 | 85/86 | 86/87 | 87/88 |
|---|---|---|---|---|
| Salaries and Wages | 3,628 | 3,506 | 3,518 | 3,491 |
| Other O&M | 2,597 | 2,481 | 2,381 | 2,342 |
| Grants and Contributions | 57* | -- | -- | -- |
| Capital | 98 | 98 | 98 | 98 |
| **TOTAL** | 6,380 | 6,085 | 5,997 | 5,931 |
| Revenues Credited To Vote | 475 | 475 | 475 | 475 |
| Person-Years | 81** | 75 | 75 | 73*** |

* Funding provided under the Canada/Quebec agreement for ecological surveys on the Lower North Shore of the St.

Lawrence River. The program was completed, therefore, resources are not indicated in future years.

** The Lands Branch received 5 person-years for student summer employment and 1 person-year from the northern oil and gas action program. The additional 6 person-years are above the normal A-base allocation of 75 person-years.

*** The reduction of person-year resources from 75 person-years in 1986/87 to 73 person-years in 1987/88 occurred because the LRTAP-3 activities were completed.

**BENEFICIARIES**

The major stakeholders include the following:

a. the Minister of the Environment and other components of the department - by providing land resource data and policy advice on land-use issues;
b. the Treasury Board - by provision of environmental policy and technical advice for federal land transactions;
c. other federal departments and agencies - by providing information and advice for the management of federal land and the evaluation of major resource development and conservation projects and programs;
d. the provinces and territories - by providing information and advice for formulating or reviewing provincial land resource policies and programs;
e. professional organizations, including the consulting industry, educational institutions, and special interest groups - by providing information to support teaching, research and advocacy;
f. industry - by providing information indicating the potential and constraints of resource development opportunities;
g. general public - by providing information to increase awareness and understanding of land-use issues and the importance of land to Canada's socio-economic well-being; and
h. farmers - by providing information regarding land-use policies and practices as they relate to agriculture.

## POLICY REVIEWS, EVALUATIONS AND AUDITS DONE ON PROGRAM

An A-base review of the program was conducted in 1977/78. This review resulted in identification of program activities (e.g. biophysical surveys) deemed to be the responsibility of the provinces. Consequently, activities of the biophysical survey teams were phased out or transferred to the provinces.

In July 1984, a framework study of the Lands Directorate was conducted by Taylor Morrison Inc. This evaluation was conducted under the supervision of the Program Evaluation Branch of the Department of the Environment and it concluded that the Lands Directorate mandate and activities are consistent with legislation and Cabinet policy.

An independent assessment of the relevance and effectiveness of the Lands Directorate programs and services was conducted by J. Phillip Nicholson, Policy and Management Consultants Ltd. in 1984. This assessment was commissioned by Lands Directorate management. In general, the results of this study supported activities of the Lands Directorate in that:

a. "...the intervention of the Lands Directorate in matters relating to land resource use and management are justified..."
b. The Lands Directorate "...has struck what appears to be an appropriate balance with the provinces in terms of the level and degrees of involvement in important national land issues..."
c. The Lands Directorate "...is the most appropriate agency to deal with land resource management issues at the federal level."

Nevertheless, several areas of concern were also identified. These included observations that:

a. "...the Lands Directorate has not developed strong and favourable linkages in relationships with the Minister or with the (senior DOE) managers. Specifically, the activities of the Directorate were not considered a high priority and were therefore not given appropriate recognition."
b. "...the Interdepartmental Committee on Land at the federal level is not a particularly effective agent to implement federal policy on land use."

## OBSERVATIONS

As a consequence of the Nicholson Study, the Lands Directorate has proposed that seven major issues receive priority attention in the pursuit of its objectives in the immediate and short term:

- assessment of the North's land base to support increased tourism;
- assessment of renewable resource potential for use by Indians;
- development of a federal policy on nationally significant wetlands emphasizing their significance in the control of water levels and salinization;
- analysis of land resource implications of agricultural improvements and practices;
- development of a mechanism to provide an annual State of the Environment Report to Canadians;
- strengthening and improvement of institutional infrastructure for land conservation in Canada;
- development of methods to determine the costs and benefits associated with activities that impact upon the land resource base and the environment.

The three most significant outputs of the Program are:

a. the provision of national land resource data bases including published reports and maps used for planning, managing and developing the natural resource base;
b. the provision of advice on the conservation of land and associated resources, to federal land managers and provincial policy makers; and
c. the development of policy advice regarding federal land resource responsibilities.

Additional benefits derived from the program include the following:

a. Enhancement of federal/provincial working relationships by providing a forum for discussion through the establishment of the Canada Committee on Land Use.
b. The provision of Canadian resource texts for university teaching. Many universities use Lands

Directorate publications as texts for geography, environmental planning and natural resources management. These texts are priced publications available through the Department of Supply and Services.

c. Development of a highly regarded international reputation for Canada in the areas of integrated land survey evaluation, and computerized land information systems.

The program's economic benefits are distributed throughout Canada, and are of particular use in urban regions and northern areas where land-use conflicts, development opportunities and the impact of federal programs are significant.

## ASSESSMENT

There is a need for a single agency to maintain a multi-sectoral perspective on the overall stewardship of Canada's land resources. This agency should recognize the various sectoral interests and competing claims for the use of land resources (e.g. claims represented by departments such as: Agriculture and Forestry; Public Works; Energy, Mines and Resources; as well as the Canada Mortgage and Housing Corporation).

The overall objective of the Lands Directorate to promote wise and sustainable land use by advancing and disseminating knowledge of land capability and use, along with the individual program objectives, remain valid. The validity of these objectives is particularly significant in Canada where socio-economic well-being is extremely dependent upon the national land resource base.

The program appears well-targeted to achieve the greatest positive impact in that:

a. it influences federal responses through impact studies to assess the effects of programs on land resources and use;
b. it influences federal and provincial decision-makers through the provision of information;
c. as previously noted, it is directed to a broad range of non-government stakeholders through the provision of information relating to various land resource issues;
d. it is issue-oriented.

While changes in federal or provincial programs could affect the Lands Directorate programs, it is unlikely that the fundamental justification for its existence would significantly change. This fundamental justification evolves from the need to have a single agency to:

a. maintain a national multi-sectoral perspective on land use; and
b. provide information and advice regarding the management of federal lands.

There appears to be little if any duplication of program activities in relation to provincial responsibilities. The programs are multi-sectoral and national in nature.

No appreciable cost-savings would be realized through program redesign. To date, cost-savings have been achieved through: increased efficiency necessitated by past resource reductions; effective federal/provincial co-operation; and project cost-sharing.

Within the limits of the existing resources, the program constitutes a realistic approach to accomplishing the identified objectives.

Some concerns were identified regarding:

a. the low priority frequently assigned to land-use issues; and
b. the division of responsibilities for land-resource activities between various departments. For example, there are lands components within each of the following departments: Agriculture (including Forestry), Public Works and Energy, Mines and Resources.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. The program be retained at the present level of resourcing and the feasibility of consolidating appropriate land-related activities conducted in the following departments be examined in detail: the Environment; Agriculture; Tourism; Forestry;

Energy, Mines and Resources; and Indian Affairs and Northern Development. It is anticipated that this consolidation would provide:

- an appropriate critical mass and would avoid the present fragmentation of effort;
- a higher profile to, and corresponding increase in, priority of land resource issues;
- a separate organizational unit offering advice to a number of federal departments and agencies; and
- increased effectiveness and efficiency.

d. The Agricultural Program Study Team's observation that the Land Resource Institute of the Department of Agriculture, being more operationally oriented, might bette fit with another branch, or be integrated with similar activities with the forestry component or in the Department of the Environment, be noted.

## ENVIRONMENT 2000

### OBJECTIVES

The Environment 2000 program had a three-fold objective: to improve the Canadian environment through environmental conservation; to create employment for youth and older workers; and to increase public awareness of environmental issues.

### AUTHORITY

Key: Minister/Treasury Board
Program to run from April 1, 1984 to March 31, 1985.

### DESCRIPTION

Environment 2000 was an employment program designed to combine DOE's conservation needs with the government's objectives of increasing employment opportunities for young and older Canadians.

The name "Environment 2000" was chosen to emphasize the fact that environmental conservation work will yield long-term benefits: the work done today will have benefits years from now.

Environment 2000 was designed primarily as a seasonal program due to the nature of the environmental work carried out within DOE. Because of the particular hardships encountered by youth (16-24 years) and older workers (45 years and older) during this decade, the program was targeted at these groups. Based on the regional availability of participants, and according to the government's youth employment objectives, at least 90 per cent of the jobs were for youth. In addition, a significant number of these jobs were aimed at under-represented groups such as women, natives and disabled persons.

Environment 2000 was delivered primarily through a sponsored projects component, and a direct-employment component by DOE.

These components were interlinked in that they both supported the goals and activities of conservation, but they differed in their hiring mechanisms and origin of proposals.

The sponsored-projects component allowed DOE to solicit, review and approve projects from eligible sponsors (as defined by the Environment 2000 Terms and Conditions) and to provide contributions for the wages and operating costs associated with the projects. Participants were referred by Canada Employment Centres.

The direct-hiring component was designed to implement incremental activities developed and initiated by various DOE Services (as defined by the Environment 2000 Terms of Reference). Participants were also referred by Canada Employment Centres but hired by DOE as casual employees.

Details by province regarding the number of jobs and dollars expended for sponsored projects and by direct hiring are provided in the attached stable. Direct hiring accounted for 15 per cent of the jobs while 85 per cent were sponsored.

## EXPENDITURES

Funding for the fiscal year 1984/85 totalled $50 million. This money was provided by the CEIC youth employment fund. It should be noted that approximately 50 per cent of the funds provided were used for forestry related activities.

## BENEFICIARIES

A total of 9,635 jobs were created at minimum wage for unemployed Canadians, with an average cost of $5,000 per job over a 20 week period. The projects furthered the aims of environmental conservation and did increase awareness of environmental concerns. The number of person-years of employment provided was greatest for work conducted through the Canadian Forestry Service. In addition to the foregoing, benefits accrued to a number of DOE programs.

## POLICY REVIEWS, EVALUATIONS, AUDITS DONE ON PROGRAM

There was an independent evaluation of the Environment 2000 program done in December 1984 by J. Phillip Nicholson, Policy and Management Consultants Inc. In addition, a survey of Environment 2000 sponsors was recently completed. The results of both the evaluation and the survey were very positive and provided strong support for the program.

## ASSESSMENT

The objectives of the program are valid and consistent with the broader environmental mandate of the department. The inclusion of targeted employment creation is consistent with other federal government programs where social, economic and service-to-government programs are used to achieve government economic and employment-development goals.

The program objectives continue to make sense; however, changes in provincial employment programs could directly affect the validity of these objectives. For example, the province of Alberta has initiated a similar program. Furthermore, the emphasis of such programs could be expected to change with the priorities established for specific environmental issues.

Program design, implementation and administration had certain shortcomings which are identified below. However, the number of items identified does not suggest a major concern; rather, they reflect a detailed listing of minor concerns.

a. There was uncertainty regarding the emphasis that should be placed on each of the three objectives (i.e., conservation, employment creation, public awareness).
b. The public and government agencies were not adequately advised regarding the emphasis placed on different environmental issues (e.g., greatest emphasis was placed on forestry rather than fisheries and other areas of concern).
c. Limited time for planning and development resulted in:
    - little emphasis being placed on planning and selecting projects that maximized long-term, sustainable impacts;
    - no broad strategies or specific priority projects being pre-determined by the Department of the Environment to ensure that environmental threats and opportunities of greatest priority were addressed by the program;
    - little emphasis being given to monitoring, follow-ups and assessment of approved projects.

d. The Public Service Alliance does not support job-creation projects that result in a loss of job opportunities for persons within the Public Service. Concern was expressed that some activities should have been conducted as part of the department's ongoing A-base. The Alliance accepted this program on a pilot basis.

e. Sponsors noted that:

  - assistance and guidance was not always available and that accounting/administrative procedures were cumbersome;
  - delays were encountered in project approval;
  - difficulties were encountered in recruiting persons meeting the specified criteria;
  - some dissatisfaction was voiced regarding the level of pay and associated rationale (such as equivalency) relating to the terms of employment.

Projects selected were technically sound, manageable and achievable, and in most cases were completed on time and within budget.

In addition to the foregoing, beneficiaries have cited the following as benefits accruing to individuals, communities and the general public:

a. an opportunity to work, doing something worthwhile, improved self-esteem, pride of accomplishment;
b. a learning of trades and skills;
c. increased interest in environmental issues (for example, conservation and herbicide use) and safety regulations; and
d. positive effects on the environment, including:
    enhancement of spawning grounds
    reforestation
    removal of diseased vegetation
    stream clearing
    paper recycling
    biological research
    erosion control

Given the program objectives, especially that of job creation, the program costs are considered commensurate with benefits.

In some cases the program duplicated provincial job creation initiatives. Savings might be realized through better planning and administration - a specific suggestion is that all such programs (federal and provincial) have a single focal point within each province.

## OPTIONS

The study team recommends to the Task Force that the government consider the following measures:

a. Consider using this program, or a similar program, when short-term employment generation is considered a priority need and job creation funds are made available.

b. Recognizing the substantial benefits related to environmentally directed job-creation projects, be responsive to the process of job creation and assist in the development and implementation of the program.

c. Funds required for implementing programs such as this be provided by Canada Employment and Immigration, or some other source, and that these funds not be obtained at the expense of regular Department program funding.

d. Consultation regarding employment conditions take place with the appropriate bargaining units in the federal public service.

e. Shortcomings noted in design, implementation and administration be rectified in implementing any future programs.

# ENVIRONMENT 2000

## Jobs and $ (000s) by Province

| | Sponsored | | Direct | | Total | |
|---|---|---|---|---|---|---|
| | Jobs | $000 | Jobs | $000 | Jobs | $000 |
| Ontario | 2,167 | 9,731 | 266 | 1,347 | 2,433 | 11,078 |
| Quebec | 1,837 | 9,201 | 287 | 1,083 | 2,124 | 10,284 |
| Nfld. | 461 | 1,560 | 113 | 466 | 574 | 2,026 |
| P.E.I. | 129 | 559 | 31 | 129 | 160 | 688 |
| Nova Scotia | 414 | 1,619 | 158 | 585 | 572 | 2,204 |
| New Brunswick | 445 | 1,713 | 84 | 364 | 529 | 2,077 |
| Manitoba | 343 | 1,549 | 62 | 307 | 405 | 1,856 |
| Saskatchewan | 329 | 1,541 | 62 | 316 | 391 | 1,857 |
| Alberta | 549 | 2,359 | 205 | 895 | 754 | 3,254 |
| British Columbia | 1,105 | 5,500 | 152 | 616 | 1,257 | 6,116 |
| Yukon | 163 | 629 | 27 | 151 | 190 | 780 |
| N.W.T. | 208 | 727 | 38 | 144 | 246 | 871 |
| | 8,150 | 36,688 | 1,485 | 6,403 | 9,635* | 43,091 |

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* CFS Extention of projects created 75 more jobs.

# RECORD OF CONSULTATION

| INDIVIDUAL | INTEREST GROUP REPRESENTED |
|---|---|

## SERVICE TO EXTERNAL CLIENTS AND ECONOMIC DEVELOPMENT

| | |
|---|---|
| D. Paavilla | Canadian Pulp & Paper Assoc. |
| B. Walker - C. Mallory | Society to Oppose Pollution |
| A. Laidlaw | Dominion Marine Association |
| R. Hoos - J. Steen | Dome Petroleum |
| C. Ross | Mobil |
| S. Barton | Ontario Research Foundation |
| D. Melo | Ontario Hydro |
| H. Scheff | York University |
| C. Ferguson | Inco |
| Dr. P. Kenniff | Concordia University |
| R. Walker | Consultant |
| B. Ford | Consultant |
| J. Hunt | Consultant |
| R. Portelli | Consultant |
| G. Ash | Canadian Society of Environment Biologists |
| A. Laycock | University of Alberta |
| N. Foulds | Sciences & Technology Instruments |

## SUSTAINING A HEALTHFUL ENVIRONMENT

| | |
|---|---|
| W. Neff | Canadian Chemical Producers Association |
| J. Bélanger - J. Dillon | Canadian Manufacturers Assoc. |
| F. Frawizac | Noranda |
| H. Bryce - S. Ferguson | Esso Refinery |
| H. Versteeg | Conservation Council of New Brunswick |
| E. May | Ecology Action Centre |
| D. Paavilla | Canadian Pulp and Paper Assoc. |
| M. Perley | Coalition on Acid Rain |
| W. Hogg | Petroleum Association for the Conservation of the Canadian Environment |
| C. Issacs | Pollution Probe |
| K. Summers | Canada Metal |
| N. Locklington | Dofasco |
| R. Vliss | Friends of the Earth |
| D. McDonald | Canadian Environmental Law Research Foundation |
| R. Fern | Esso |
| E. Caldwell | Esso |

| **INDIVIDUAL** | **INTEREST GROUP REPRESENTED** |
|---|---|
| **SUSTAINING A HEALTHFUL ENVIRONMENT** | |
| M. Greenfield | Dofasco |
| F. Franasak | Noranda |
| R. Gossen | GOGLA |
| J. Parkhill | Conservation Council N.B. |
| J. Brown | Conservation Council N.B. |
| D. Coon | Conservation Council N.B. |
| J. Macleod | Island Nature Trust P.E.I. |
| M. Behr | Wildlife Federation Nfld. |
| G. Okrainetz | Sierra Club B.C. |
| M. Doherty | Sierra Club Western Canada |
| O. Green | F.D.C. Quebec |
| L. Duncan | Environ Law |
| B. Goldsmith | Concordia University Quebec |
| D. Brooks | Friends of the Earth |
| **WISE MANAGEMENT OF NATURAL RESOURCES IN THE FEDERAL SPHERE OF INTEREST** | |
| F. Wall | IWA |
| D. Monture | Native Organizations: AFN/ITC/ATFC |
| R. Innuksuk | |
| B. Stevenson | |
| J. Munro | International Wood Workers Union |
| J. Pacholik - B. Ireland | D.O.E. Component of Public Servants Alliance of Canada |
| B. Whittam | Midland Interpretation Centre |
| S. Hazel - K. Byrneart | Canadian Wildlife Federation |
| G. Sheehy | Canadian Nature Federation |
| D. Neave | Wildlife Habitat Canada |
| I. Hillier | Chemical Workers Union |
| D. Kirk - B. Hamilton | Canadian Federation of Agriculture |
| T. Turner - J. Caceras | Saskatchewan Wheat Pool |
| J. Giles | Ducks Unlimited |
| R. Laberge | Co-Op Union of Canada |
| D. Martin - R. Baldwin | Canadian Labour Congress |
| J. Fryer | Canadian Environmental Advisory Council |
| G. Beric-Smith | Canadian Institute of Planners |
| T. Wilkinson | Carleton University |

| **INDIVIDUAL** | **INTEREST GROUP REPRESENTED** |
|---|---|
| **PRESERVATION AND PRESENTATION TO THE PUBLIC OF EXAMPLES OF NATURAL AND CULTURAL HERITAGE** | |
| K. Luks | ENGO's National Steering Cttee. |
| S. Holtz | Ecology Action |
| D. Coon - J. Brown | Conservation Council of N.B. |
| MacNamee | Nat'l & Prov. Parks Assoc. |
| B. Staszinski | Ecology Alberta |
| N. MacPherson | Yukon Conservation Society |
| D. Green. | Société pour vaincre la pollution |
| R. Vles - J. Stewart | Friends of the Earth |
| G. Sheehy | Canadian Nature Federation |
| T. Fenge | Canadian Arctic Resources Committee |
| A. Hackman | Fed/Ont Naturalists |
| W. Kines | Pollution Probe |
| G. Miller - R. Woodbridge | Mining Assoc. of Canada |
| B. Boyd | Friends of the Earth |
| J. Cottrill | St-Lawrence Parks Commission |
| T. Lalonde | Seaway Valley Tourist Council |
| W. Lesurf | Smith Falls Chamber of Commerce |
| J. Brennens | Smiths Falls Heritage Society |
| P. Burchell | Canada Ontario Rideau and Trent-Severn Advisory Council |
| Don Warren | Chaffeys Locks Heritage Society |
| G. Spatford | Rideau Lakes/1000 Islands Tourist Council |
| T. Huck | St-Lawrence Parks Commission |
| A. Wills | Institute of Man & Resources |
| M. H. Posey | Parks of Tomorrow |
| T. Munson | Yukon Conservation Society |
| C. O'Brian | Conservation Society of NWT |
| J. McLeod | Island Protection Assoc. |
| J. Hnytka | Sierra Club of Western Ontario |
| M. Kostuck | Alberta Wilderness Assoc. |
| B. Staszinski | Alberta Wilderness Assoc. |
| R. Nation | Alberta Wilderness Assoc. |
| G. Clark | Environment Committee Tourism Association of Canada |
| A. Billard | Eastern Fisherman Federation |
| G. Clarke | Tourism Industry |
| R. Ames | Tungavik Federation of Nunavut |

| INDIVIDUAL | INTEREST GROUP REPRESENTED |
|---|---|
| **GENERAL INTERVIEWS** | |
| K. Oakley | Canadian Petroleum Association |
| T. Beck | CEAC |
| N. Macpherson | Public Interest |
| T. Munson | Public Interest |
| R. Vles | Friends of the Earth |
| Dr. Reinelt | University of Alberta (Meteorology) |
| A. Laycock | University of Alberta (Water Resources) |
| J. Stewart | Saskatchewan Institute of Pedology |